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The M
Spring
Three

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Farm F	FIRST SERIES		SECOND SERIES—continued.	
	Vol. I. (1839-40)	Vol. I. Parts I. (1), II. (2), III. (3), and IV. (4).	Vol. XVII. Part I. (1), II. (2), III. (3), and IV. (4).	Vol. XVII. Part I. (1), II. (2), III. (3), and IV. (4).
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	2. 1842 ... III.	I. (viii), II. (ix), & III. (x).	45. 1884 ... XX.	I. (xxix) & II. (xl).
	3. 1843 ... IV.	I. (xi) and II. (xii).	46. 1885 ... XXI.	I. (xli) and II. (xlii).
	4. 1844 ... V.	I. (xiii) and II. (xiv).	47. 1886 ... XXII.	I. (xliii) and II. (xliv).
	5. 1845 ... VI.	I. (xv) and II. (xvi).	48. 1887 ... XXIII.	I. (xlv) and II. (xlvi).
	6. 1846 ... VII.	I. (xvii) and II. (xviii).	49. 1888 ... XXIV.	I. (xlvii) and II. (xlviii).
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	8. 1848 ... IX.	I. (xxi) and II. (xxii).		
	9. 1849 ... X.	I. (xxiii) and II. (xxiv).		
	10. 1850 ... XI.	I. (xxv) and II. (xxvi).		
	11. 1851 ... XII.	I. (xxviii) and II. (xxix).		
	12. 1852 ... XIII.	I. (xxxi) and II. (xxxii).		
	13. 1853 ... XIV.	I. (xxxiii) and II. (xxxiv).		
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	20. 1860 ... XXI.	I. (xlviii) and II. (xlix).		
	21. 1861 ... XXII.	I. (l) and II. (li).		
	22. 1862 ... XXIII.	I. (lii) and II. (lii).		
	23. 1863 ... XXIV.	I. (liii) and II. (liii).		
	24. 1864 ... XXV.	I. (liii) and II. (liii).		
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PHYSIOLOGY AND BACON-CURING.

An Account of an Investigation into the Causes of "Seedy-cut" and the Results of Spaying in Sows.

IT is improbable that even those who were large-minded enough to see the importance of coupling "Practice with Science" when founding the R.A.S.E., could have realised that physiological investigation would become essential in elucidating any of the processes involved in the art of bacon-curing. But we believe that the following account of some investigations which we have carried out will provide further proof of the wisdom of those agriculturists who decided upon this motto for England's leading agricultural society.

In the course of an investigation into another matter some years ago, it was brought home to us that a considerable loss was taking place in the bacon factory owing to a peculiar discolouration which occurred in a certain proportion of "sides" prepared for curing. This discolouration, if present, is easily seen by cutting into the belly of the slaughtered animals. That part of the side which is so discoloured is known technically as a "black-belly" or, more commonly perhaps, as a "seedy-cut." The discolouration is found in the area surrounding the nipple of the pig, and frequently also in the intervening tissues. In the high-class bacon factory part of the process of preparing the carcass for curing consists in "searching" the sides for this discolouration. When found to be present the seedy-cut is immediately cut off the side by the searcher. One manufacturer weighed the strips of flesh

so removed and was kind enough to inform us of his results. He found that the seedy-cut removed from each of 3,267 sows weighed on an average $3\frac{1}{2}$ lb. To realise what the loss from this discolouration means one must bear in mind that the area from which it is removed forms part of the prime joint known in the bacon trade as the "streaky," and that the streaky is worth from 8d. to 9d. per lb. in an average year. Further that the $3\frac{1}{2}$ lb. of seedy-cut removed from that part, which would otherwise be prime joint, is melted up into rough grease worth relatively 2d. or 3d. per lb. Further, that out of 13,931 sows 3,267, or 23·4 per cent., were found to carry seedy-cut. So that in a bacon factory dealing with large numbers the loss per annum runs into thousands of pounds. But it does not end here. For the removal of this discoloured part of the bacon renders the whole side inferior. It is, after curing, put into a grade by itself and sold as *unbranded* meat. This unbranded bacon fetches 10l. a ton less on the market, in an average year, than does the grade which is sold under the guarantee of the manufacturer's brand.

These were the facts as ascertained from the owners and managers of one of the principal manufactories of bacon in England. Further inquiry elicited the information that seedy-cut was a difficulty with many other leading manufacturers of bacon.

THE SUPPOSED CAUSE OF SEEDY-CUT.

We were told definitely that the condition present in seedy-cut was related to certain sexual changes occurring in sow pigs. Not only were we so informed at the outset of our inquiry, but this belief was clung to long after our own observations led us to doubt its truth. It was moreover contended that the discolouration was only present when a sow was slaughtered *in oestro*, or, as the pigman would say, "on heat." It was affirmed further that the seedy-cut was more often seen in coloured pigs than in white ones. Many other notions concerning the matter were found to exist; for instance, that pigs from Ireland never carried the discolouration.

The above assurances were gathered first hand from leading bacon manufacturers, either by personal interview or by correspondence. But no one having any knowledge of swine in connection with bacon-curing can have failed to hear these or similar rumours. For instance, one of our leading authorities, acknowledged as such in England, on the continent, and in America, writes in a work of recent issue¹ as follows:—

¹ *The Standard Cyclopedia of Modern Agriculture*. The Gresham Publishing Company. "Pigs, Breeding, Feeding, and Management of," pp. 226, *et seq.* Signed S. S.

"When at last the unsprayed gilt or young sow becomes fit for the butcher her flesh will be greatly deteriorated, and in some cases unfit for the bacon curer if she be slaughtered during the period of œstrum, as the belly portion of the side of bacon will be 'seedy' or discoloured, due to the impossibility of extracting the whole of the blood from the inflamed udder."

A SUGGESTED REMEDY.

As seedy-cut was held to be due to œstrus, the desexing or "spraying" of sows was suggested to us as a certain cure. This practice is undoubtedly on the decline. We were assured that with its discontinuance seedy-cut had become more prevalent.

There seems little doubt that spraying was very extensively practised throughout the length and breadth of England at one time; whereas at the present date, except in the Eastern Counties, where the practice is very common but by no means universal, it is only found to be carried out occasionally in very restricted and widely separated districts. The causes of the decadence of the practice seemed to be manifold. We were informed that pig keepers had given it up because of the risk, and again, because of the frequency of imperfect spraying, the fact being that in some cases, the operation risks having been run, the sow behaved as if she were "open." (This last expression is used to denote that the sows have not been operated upon.) Moreover, we were often assured that not only were men skilled in the art of spraying becoming less successful, *i.e.* losing a larger percentage of the animals thus operated upon, or having more cases of sprayed sows behaving as if open, but that such operators were becoming difficult to find at all. We ourselves were inclined to think that the change in the general system of pig-keeping was an important factor in the decline of the practice of spraying. Mr. John M. Harris tells us of this change in his article on "Pigs and Bacon."¹ Up to fifty or sixty years ago a much larger and consequently older pig was wanted. It is obvious that the recurrent sexual changes, if interfering with the animal's development, might be of greater consequence, because more numerous, in a sow killed at from ten to twelve months old—or even over—than in the case of pigs slaughtered, as Mr. Harris suggests, at from six to seven months old.

But it appeared to us that at the base of all objections was want of definite knowledge. The seedy-cut difficulty was one of those matters which concerned the bacon manufacturer directly, and only affected the pig-feeder very remotely. The

¹ "Pigs and Bacon," *Journal R.A.S.E.*, Vol. 68, 1907, page 71.

bacon manufacturer, however, wished the farmer to spay, not only, as he believed, to overcome this "curer's" difficulty, but also for his own sake, the manufacturer alleging that the spayed sow did better, returned more weight for a given amount of food, and made a more profitable animal than the pig allowed to remain open. The manufacturer was not alone in his belief. We had ample evidence in our private correspondence, as well as in our conversations with many pig breeders and feeders, that this view was accepted by a considerable number of agriculturists who had had much experience in swine husbandry. These opinions are succinctly expressed by the authority we have already quoted.¹

"Of late years the system of leaving all the sow pigs unspayed has been somewhat generally followed, the excuses being that a certain amount of risk attended the operation, and that a trouble as well as an expense existed in finding a competent operator. Needless to say the trouble and risk exist largely in the imagination of the owners of the pigs, whilst the loss to the owner, butcher, bacon-curer, and consumer is certain and far more considerable than is generally believed, as after the sow pig has reached the age of five or six months not only will she fail to make flesh, but on three or four days in alternate periods of three weeks she will be a source of worry and a nuisance to all the other pigs with which she can come in contact, rendering them restless and temporarily thriftless."

Notwithstanding this opinion, and that of other leading authorities confronting them, the pig-husbandry men were obdurate, many assuring us with a certainty quite equal to the above quotation that the practice was useless to them and certainly did not cover the risk and trouble.

The position of affairs may be summarised as follows:—We had, on the one hand, indubitable loss of considerable extent, taking place owing to seedy-cut; the undeniable possibility of desexing sows; and the curers as well as practical breeders and feeders claiming that spaying would benefit the farmer who depended upon swine-husbandry for part of his living. On the other hand, it was alleged, we had the farmer refusing to help both himself and the bacon-curer through want of knowledge as to the benefit said to be derived from desexing the sow pigs which he reared or fed. This condition of affairs led us to carry out the investigations we are about to describe. Accurate knowledge on all the points seemed wanting, and consequently our investigation has followed three definite and more or less separate lines, one being the

¹ See footnote on page 2.

physiology of seedy-cut, the second the reasons why spaying is said to be useless as a desexing operation, and the third the practical and economic value of spaying.

THE PHYSIOLOGY OF SEEDY-CUT.

It has been mentioned that the condition present in seedy-cut is due to the existence of black pigment in the mammary tissue. Microscopic sections revealed the fact that the pigment granules occur within or in close contiguity to the epithelial cells which line the mammary ducts, as well as in the connective tissue between the ducts. Seeing that their presence was regarded by bacon manufacturers and practical men generally as an indication of "heat" or œstrus it seemed extremely probable (as supposed by the authority quoted above) that they were granules of blood pigment resulting from the extravasation of red corpuscles into the tissues in much the same way as is known to take place in the uterus or "bed" of the ewe and other animals when "on heat." That this uterine pigment is actually derived from blood has been proved, partly by the microscopic examination of transitional stages, and partly by the fact that it contains iron as established by a chemical test known as the ferrocyanide or Prussian blue reaction. It seemed desirable therefore to apply this test to the pigmented tissue of the mammary area in pigs. This was accordingly done, but the results were in each case negative. Sections of mammary tissue which were treated with hydrochloric acid and potassium ferrocyanide according to the manner of the test did not show the characteristic blue stain which indicates the presence of iron (an essential constituent of blood). Attempts to detect iron by dissolving up some pigmented mammary tissue in a tube and then applying the ferrocyanide test were likewise negative in result. These experiments, therefore, pointed to the conclusion that the melanic pigment of seedy-cut is not derived from extravasated blood.

We proceeded further to inquire more closely into the precise conditions under which seedy-cut occurs, and found, contrary to our original expectation, that it is very frequently present in normal sows which are not "on heat," that it is equally common in spayed sows, and that it may be found, though not nearly so often, in hogs. These observations confirmed our belief that the presence of seedy-cut had no relation to the sexual condition of the pig.

Furthermore, we found that the dark pigment in the mammary tissue was never present in the white breeds of pigs, and that in black and white animals it was not so frequent as in entirely black ones. Moreover, in a red

Tamworth sow it was discovered that reddish or sandy-coloured pigment was present in the mammary tissue, thus indicating that the mammary pigment of swine generally, bears a close relation to the pigment of the hair, and is probably identical with it, or else very similar.

If any further proof was needed that the pigment of seedy-cut is not blood pigment due to the recurrence of heat it has been supplied by Mr. John Hammond, who has not only found it in a seven weeks' old pigling but also in an unborn or fetal pig, in which he has traced the pigment granules along the course of the developing mammary ducts which were seen to be dipping inwards from the surface of the skin.

We are able therefore to state categorically that those professional searchers and others who have relied on the presence of black pigment in the "belly piece" of sows as evidence that the animals were in a condition of "heat" have been proceeding on entirely false premises. In view of the commercial importance attached to the practice above described it may seem strange that it should be based on complete error. Yet the facts which we have definitely ascertained after a prolonged and careful investigation of all sides of the problem have convinced us that it is not possible to arrive at any other conclusion.

IMPERFECT SPAYING.

Experiments have shown in the case of bitches, rabbits, and other animals that the oestrous or female sexual cycle ceases to recur after the complete surgical removal of the ovaries which are the essential reproductive organs in the female. If the operation is performed during immaturity the uterus or "bed" remains in the undeveloped infantile condition characteristic of early life. If, on the other hand, the ovaries are removed after maturity has been reached, the uterus undergoes a process of atrophy or degeneration, becoming gradually reduced in size and losing all signs of functional activity.

Further experiments have succeeded in establishing that the surgical extirpation of the uterus without the ovaries does not arrest ovarian growth or activity since ripe eggs are still produced, and the oestrous cycle continues to recur after complete hysterectomy, as the operation of uterine removal is called.

That the functional correlation subsisting between the sexual organs should be different in some from what it is in other animals seemed extremely unlikely, and it appeared to us safe to assume that those cases where sows which had been submitted to the operation of spaying, and yet subsequently

experienced a recurrence of "heat," were to be explained on the assumption that ovarian tissue had been accidentally left behind at the time of the operation.

Fortunately it has been unnecessary for us to make any assumption at all in regard to this matter as the following cases show.

In the first case a sow, procured for us through the courtesy of Mr. Morris Wright, of Whitton, Ipswich, was reported to have been spayed, yet behaved as though "open," experiencing recurrent œstrus and copulating with a boar. The sow was killed six days after copulation, when it was found that the left ovary, together with the Fallopian tube or oviduct, and the horn of the uterus on the same side, were present in a state of normal development. The generative organs on the right side were wanting, evidently having been removed at the time of the operation.

In a second case, also obtained for us by Mr. Morris Wright, a sow said to have been spayed, likewise showed signs of "heat." After being slaughtered it was found that the whole of the internal generative organs had been removed with the exception of the left ovary, which contained ripening ova.

The third case was one of our own sows, which had been submitted to the operation of spaying by a professional veterinary surgeon. Several months later this animal showed unmistakable signs of œstrus, a condition which was repeatedly observed until her death. A post-mortem examination showed that one ovary was present and contained a large number of ripening eggs. The other internal generative organs had been removed.

A consideration of the process of spaying makes it easy to understand how in the hands of an ignorant or unskilful operator functional ovarian tissue may be frequently left behind in the sow, and so admit of the recurrence of œstrus. At the age when spaying is usually performed the ovaries are very minute and may readily be overlooked; and the tissue which attaches them may be torn across in attempting to excise the uterus and tubes. Moreover, one horn of the uterus together with its associated ovary may easily get torn away from the other horn, as evidently actually happened in the first case described above.

Probably in the operation of spaying sows for ordinary commercial purposes it would be impracticable to remove the ovaries without the uterus, for the latter organ is readily felt and recognised by the gelder, but, as has already been indicated, the view, which appears to be held by bacon manufacturers that it is essential to extirpate the "bed," has no scientific

basis. Removal of the uterus has no detrimental results, but, physiologically speaking, it is immaterial whether this organ is removed or not in animals which are not intended for breeding purposes. On the other hand, it is absolutely essential that the ovaries should be completely extirpated,¹ and those cases in which spaying is said to have been ineffective in preventing the recurrence of oestrus are clearly to be explained as having been due to faulty operating. That such cases are far commoner than is ordinarily believed, our experience leads us to think probable. Indeed it would be wonderful were it otherwise, in view of the prevalent ignorance in regard to the true functional correlation subsisting between the ovaries and the uterus, and the effects of ovariectomy and hysterectomy as independent operations. Members of the veterinary profession will have no difficulty in appreciating this point, and we venture to hope that it may become customary to secure their services in carrying out the operation of spaying.

THE ECONOMIC VALUE OF SPAYING.

Fortunately the Cambridge University Farm, on which we have facilities for working, is situated in a district where spaying is the usual practice. Consequently we had only to continue the practice of spaying and keep back unoperated sows for experimental purposes.

The risk of the operation.—When we took over the present farm and began pig-breeding in 1909 we found that it was the practice in the neighbourhood to allow an unqualified “cutter” or “gelder” to operate upon the sow pigs. This system, perhaps not unnaturally, did not commend itself to us. We were fortunate enough to induce Mr. J. G. Runciman, M.R.C.V.S., to add the performance of ovariectomy to the other duties he undertook as veterinary surgeon on the Cambridge University farm. We have records of 119 operations performed by Mr. Runciman. We have only had one death directly attributable to this cause, the sow dying of blood poisoning. A second death occurred under circumstances which made it very doubtful if the operation had anything to do with the loss.

We venture to think that if spaying is ever again to become universal the operation will have to be left in the hands of the professional veterinary surgeon, and not assigned to the care of the unqualified castrator. The fee charged is so very reasonable that there is no excuse for demanding empirical help, and the

¹ There should be no practical difficulty in pinching off the ovaries from the uterus when these organs are withdrawn from the body. However, so long as the ovaries are removed it is of little importance what happens to the uterus. For a description of the operation of spaying as ordinarily carried out see our paper in the *Journal of Agricultural Science*, vol. V., 1913.

skill required is so great that the operation cannot fail to engage the professional interest of the fully trained practitioner.

The age at which to operate.—Guided by local custom in the early days of our investigation the sows were not “altered” until after weaning. The operation takes place at ages varying from nine to thirteen weeks. This we now believe to be wrong. The results were better, we believe, when ovariectomy was performed at any age between six weeks and before weaning. In carrying out the local practice of spaying late we were supported by the authors of the well-known pamphlet, “Pigs for Bacon.” This is what they say:—“All pigs not intended to be kept for breeding should be operated on at about six to eight weeks old for the boars and ten to twelve weeks for the hiltts.”

When we began to doubt the advisability of operating late, we wrote to one of the authorities responsible for its publication, who answered as follows:—

“With regard to the age at which sows should be spayed, you will see from the enclosed pamphlet that we advocate that the boars should be castrated at six to eight weeks old, and the hiltts at ten to twelve weeks. We think from experience since this was written that this is the very latest time that it should be done, and that in our opinion both the boars and the sows should be operated upon at the same time, and that should never be later than eight weeks.”

This is entirely borne out by the fact that at the age of eleven weeks the internal generative organs may be already in a state approaching maturity. In one such case the ovaries were seen to contain follicles protruding from the surface, while the uterus was no longer infantile but had undergone a marked degree of growth. It is evident therefore that the ovaries at this age already exert an influence over the metabolism, this being clearly manifested by the condition of the uterus, and it is obviously undesirable to defer ovariectomy to a time when the ovarian influence has become considerable.

THE IMMEDIATE EFFECT OF SPAYING.

The pig-keeper who has no experience of desexing sows has no idea of how little this serious operation affects the young animals. They are quiet and depressed for a few hours, but having fasted for twenty-four hours before the operation they eat readily the small quantity of food which is allowed on the first day after spaying. The external wound is swollen for several days, and often looks red and angry, but the following table shows how little this affects their increase in live weight:—

¹ Compiled and published by “The Western Curers’ Association.”

TABLE I.—*Showing the immediate effect of Spaying.*

Litter	Age on date of spaying	Weights on date of spaying		First weighings							
				No. of days after spaying	Weights		Total increase		Daily gain		
	Days	Spayed	Open		Spayed	Open	Spayed	Open	Spayed	Open	
Pigs of unknown age.											
A	1	21.5	35.5	14	25.5	39.5	4.0	4.0	0.30	0.30	
B	1	28.0	25.5	14	30.5	30.0	2.5	4.5	0.18	0.32	
C	1	29.0	29.0	13	34.5	33.5	5.5	4.5	0.42	0.35	
C	1	26.0	27.0	13	30.5	31.5	4.5	4.5	0.35	0.35	
C	1	29.0	33.0	13	31.5	38.5	2.5	5.5	0.20	0.42	
D	1	20.0	18.5	13	27.0	21.5	7.0	3.0	0.54	0.22	
D	1	18.5	17.5	13	23.5	21.5	5.0	4.0	0.38	0.30	
D	1	17.0	15.0	13	18.5	17.5	1.5	2.5	0.11	0.20	
		189.0	201.0	—	221.5	233.5	32.5	32.5	—	—	

Young pigs.

E	48	27.0	27.0	6	33.0	35.0	6.0	8.0	0.75	1.00
E	48	23.0	20.0	8	30.0	24.0	7.0	4.0	0.87	0.50
F	52	22.0	21.0	36	23.0	24.0	1.0	3.0	0.03	0.09
F	52	21.0	25.0	36	29.0	36.0	8.0	11.0	0.22	0.30
G	51	20.0	18.0	35	27.0	19.0	7.0	1.0	0.20	0.03
G	51	17.0	18.0	36	21.0	27.0	4.0	9.0	0.11	0.26
G	48	23.0	22.0	35	35.0	31.0	12.0	9.0	0.34	0.26
H	48	19.0	18.0	35	29.0	22.0	10.0	4.0	0.29	0.11
H	48	20.0	20.0	35	28.0	28.0	8.0	8.0	0.23	0.23
		192.0	189.0	—	255.0	246.0	63.0	57.0	—	—

Older pigs.

K	116	60.0	57.0	57	140.0	126.0	80.0	69.0	1.4	1.2
K	116	50.0	55.0	57	124.0	128.0	74.0	73.0	1.3	1.3
M	94	42.0	44.0	38	72.0	84.0	30.0	40.0	0.8	1.0
M	94	35.0	33.0	38	60.0	62.0	25.0	29.0	0.68	0.76
		187.0	189.0	—	396.0	400.0	209.0	211.0	—	—
Total		568.0	579.0	—	872.5	879.5	304.5	300.5	—	—

¹ These pigs were bought in as weaned; no accurate age could be ascertained. They varied from eight to ten weeks.

FEEDING TRIALS.

As far as the farmer is concerned the problem of the feeding pen was most important. This part of the investigation proved troublesome. We determined to put up *pairs* of sows,

that is to say that for every sow operated upon in the ordinary course of our farm work we left one of the same litter of as near as possible the same weight, and if in the course of the trial one or other went wrong we withdrew the pair of pigs from the experiment. In the first stages of this work we had unfortunately to buy in litters of pigs from all over the country. This led to an outbreak of swine-fever, which, though delaying us six months, was eradicated. But worse, swine-erysipelas was brought in by a litter from a neighbouring farm, and this has been a constantly recurring trouble. Many pairs and several whole pens under trial have had to be discarded through this disease, which is most insidious.

We are, however, able to give in Table II. below the results obtained with thirty pairs. Needless to emphasise, the spayed sows had been treated in every way exactly the same as had the open ones except as regards the operation.

TABLE II.

Spayed sows	Age when spayed	Weight at spaying	Live weight when killed	Carcass weight	Percent- age of carcass to live weight	Open sows	Weight when follow spayed	Live weight when killed	Carcass weight	Percent- age of carcass to live weight
No.	Days					No.				
1 S	55	16	209	157	75.0	1	12	196	147	75.0
2 S	60	20	187	144	77.0	2	21	217	160	73.2
3 S	78	11	208	158	76.0	3	11	166	119	71.8
4 S	82	14	226	170	75.2	4	15	235	184	68.5
5 S	82	12	200	150	75.0	5	11	227	164	72.2
6 S	82	21	182	131	72.0	6	19	192	147	76.5
10 S	56	28	228	178	78.0	10	25	240	178	74.0
11 S	56	29	229	177	77.4	11	29	249	191	76.6
12 S	56	28	254	182	71.7	12	33	212	154	73.0
13 S	56	26	274	212	77.2	13	27	220	168	76.0
14 S	116	50	200	133	66.4	14	57	200	145	72.5
15 S	116	60	216	154	71.3	15	55	184	138	75.0
16 S	49	27	231	186	80.0	16	27	200	163	81.5
17 S	49	23	249	204	82.0	17	20	184	139	75.1
18 S	52	21	278	216	78.0	18	21	182	143	78.4
19 S	52	22	238	183	77.0	19	25	282	220	78.0
20 S	51	20	233	178	76.1	20	19	210	156	74.2
22 S	54	23	248	190	76.8	22	22	236	180	76.2
23 S	54	19	228	175	76.5	23	20	185	146	78.0
24 S	56	21	182	141	77.1	24	21	200	154	77.0
25 S	61	21	265	197	74.3	25	21	202	150	74.8
26 S	63	22	227	172	75.7	26	27	189	145	76.5
27 S	61	23	233	135	77.7	27	23	178	129	72.3
28 S	65	20	186	145	78.0	28	20	212	165	78.0
30 S	58	25	175	132	75.4	30	24	194	144	74.0
31 S	57	27	176	129	73.3	31	23	178	136	76.4
32 S	54	30	230	177	77.0	32	27	185	143	77.3
33 S	54	24	182	146	79.6	33	24	172	124	72.1
34 S	56	28	228	171	75.0	34	32	184	147	79.7
35 S	57	22	178	135	75.8	35	27	184	137	74.4
Total	—	734	6,584	5,008	—	—	738	6,124	4,596	—
Average	—	24.46	219.4	166.9	76.0	—	24.6	204.1	153.2	76.0

It will be seen from the table that the thirty spayed sows had on the average each gained 15·3 lb. more than the open ones, or 7·5 per cent. It will be further seen that the spayed sows were on the average 1 per cent. better in carcass weight. Put in other words the average spayed sow was a pig weighing 219·4 lb. live weight, and yielded 169 lb. of pork, whereas the open sow weighed 204·1 lb. and yielded 153·2 lb. of pork, the difference in favour of the spayed sow being 16·7 lb. of pork or over 10 per cent. more meat.¹

Notwithstanding the great variability in individual pigs, we venture to express the opinion that this result is emphatic, for not only is the number of animals considerable but the greatest precaution was taken in every case throughout the whole life of the pigs to insure that each animal in a pair received identical treatment in every possible respect.

COST OF INCREASE IN FOOD.

We can give no definite opinion upon this matter. We are inclined to think that the extra weight is gained at the expense of some extra food. The question is not very easy to decide. We were about to put the matter to a very thorough test when war broke out and our piggeries were requisitioned for military purposes.

BREED.

In the course of these investigations Large and Middle Whites, Large Blacks, Berkshires and crosses had to be used, and were constantly operated upon. The operator found the long flat-sided animal the easiest subject, but we could not notice that the short, thick pigs suffered more than any others.

DISTURBANCE FACTOR.

In the few trials in which this point was tested we got no result, but as many of these trials happened to be ones in which some unsatisfactory occurrence interfered with the experiment our data are insufficient to allow us to form any definite opinion.

SUMMARY OF CONCLUSIONS.

The black pigment so often found in the mammary area of sows belonging to coloured breeds is in no way related to sexual changes occurring during the period of heat or oestrus. On the other hand it is closely similar to, or identical with, the pigment of the hair, and is consequently harmless. It follows

¹The majority of these pigs were about seven months old at the time of slaughter. In a few cases a store period was given, but the spayed sows gained no appreciable advantage in weight by postponing the slaughter.

that the heavy losses sustained by bacon manufacturers owing to the presence of this pigment have been incurred unnecessarily, and that any objection to seedy-cut that may continue in the future will be the result of either ignorance or prejudice. It is noteworthy that pigment of the kind described is never found in white pigs.

Experiments have shown that the results of ovariectomy are such as to justify the operation being carried out for commercial purposes, since spayed sows tend to feed better and fatten faster than open or unoperated ones. Moreover, it has been ascertained that those cases in which sows which were supposed to have been spayed have behaved as though they were open are the result of faulty operating. Lastly, it has been pointed out that the removal of the ovaries is the only essential part of the operation.

In conclusion we desire to tender our thanks to all those who have helped us in this investigation. To the proprietors of Messrs. C. & T. Harris & Co., Ltd., the Central Wiltshire Bacon Co., Ltd., the Dunmow Flitch Bacon Co., Ltd., and the Herts. and Beds. Co-operative Bacon Co., Ltd., we are indebted for the numerous facilities they have placed at our disposal in their respective factories. In particular we would like to mention the kind help we have received from Mr. John Harris, of Calne; Mr. F. Reynolds, of Devizes; and Mr. Hasler, of Dunmow, as well as to acknowledge the assistance of Messrs. Beazley, Millar, Whitaker and Welsh, officials of the above-mentioned companies. Mr. S. P. Drew, of the Glasnevin College, Dublin, has supplied us with interesting information about Irish pigs. Mr. Sanders Spencer has given us the benefit of his special knowledge of swine husbandry; and Mr. John Hammond, Mr. Russell Beverley, and Mr. Philip Rolfe, Assistants in the School of Agriculture, Cambridge, and Mr. A. S. Burgess, Farm Bailiff, have afforded us ready and valuable help at all stages of the work. To all of these we would express our gratitude. Lastly, we desire to record our thanks to the Board of Agriculture and Fisheries for contributing largely towards the expenses of the investigation by making us a special research grant from funds placed at their disposal for this purpose by the Development Commissioners.

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WEEDS ON ARABLE LAND AND THEIR SUPPRESSION.

THE most casual inspection of the countryside shows clearly that plants, like animals, respond very readily to the conditions under which they happen to live, this response being evident in the different development of similar plants under varying conditions. Many factors play a part in determining growth, some of these being so closely connected that it is often difficult to separate one from the other when their effect upon the plant is being considered. The food supply, the nature and texture of the soil, the water supply, the amounts of light and heat available during the different periods of life, the competition of one plant with another, the interference or neglect of man, all have a very direct influence upon plant life. The relative importance of these conditions varies with the species—while some plants will only grow satisfactorily on certain types of soil, such as clay or sand, others are indifferent in the matter; while some are impatient of any excess of moisture, others do best in a very wet, almost water-logged, soil; while some, as many grasses, grow happily in close contact with their fellows, as in a pasture, others refuse to develop properly unless they are isolated and free from all competition; and while some wild plants attain a better development on soil which is under cultivation, others die out more or less rapidly from their native haunts as soon as there is any interference with their habitat by the hand of man.

In the present paper we are concerned with those plants that are met with on land that is tilled, "plough land" or "arable land" as distinguished from "pasture" and "meadow land." In spite of the constant movement of the soil certain plants or weeds always appear in addition to the cultivated crop, and these weeds create one of the great problems with which the farmer has to cope. It cannot be too fully recognised that the cultivated soil provides the very habitat in which the weeds delight, and that if they are left unchecked they are living under the very best conditions that they could possibly desire. Weeds make exactly the same demands upon the land as do the crops—they utilise food, water, air, light and space—and further, as the conditions are more natural for them than for the crops, they will get the upper hand if possible and do untold harm to the cultivated plants. "One year's seeding means seven years' weeding"—i.e., it is not only that the present crop is likely to suffer, but also very great expense and trouble will be incurred in the near future because of the harvest of weeds arising from this year's seeding.

DAMAGE DONE BY WEEDS.

The baleful effects of weeds are many and varied and the evil influence is exercised both upon the crop and the soil. The primary evil is that caused by their competition with the cultivated plants, which are usually of such a nature that they are very impatient of the presence of aliens. Pot experiments have shown that if two plants are grown in the place of one the development of each usually fails to reach its maximum, and sometimes one or other is most seriously injured if its neighbour holds the field successfully. The competition of weed with crop goes on both below and above ground, in the soil and in the air. Space, food, air and water in the soil are all limited, and the roots of the weeds ramifying underground make large demands upon all these essentials, so that the supply available for the crop is considerably curtailed, with the result that growth is checked to a greater or less extent. The presence of many weeds may greatly deplete the water supply, particularly in a dry season. Each plant draws heavily upon the stores of water in the soil, and gives off large quantities into the air from its leaves, so that every weed means an unnecessary waste of water. If the land is clear a "dry mulch" can often be maintained by cultivation, whereby the soil moisture is largely conserved to the benefit of the crop. Above ground the weeds do harm by smothering and choking the crop; their leaves are usually numerous or large, and they overshadow the cultivated plants, robbing them of much of the sunlight that is absolutely necessary if good growth is to be made.

Weeds have also a directly injurious effect on the soil, and thus cause further indirect harm to the crop. This is because the weeds overshadow the soil, hindering the free access of rain, air and sunlight, all of which play their part in promoting those conditions which make for perfect growth. It is this action of the weeds upon the soil that makes a dirty fallow worse than useless. Even a bastard or short fallow is exceedingly useful in improving the land if it be kept clean and free from weeds, but if all manner of plants are allowed to flourish nothing is gained, but much is lost by the continued exhaustion of the land.

In addition to causing direct injury to the soil and to the crop, weeds add greatly to the expense of cultivation, as they cause a considerable increase in the time and labour involved in the various farm operations.

Some weeds are specially obnoxious in ways peculiar to themselves:—

1. They may be of such a nature that they interfere with the working of farm machinery. *Cornbine*, *black bindweed*, and *cleavers* form long stems which climb about among the

corn crops or trail along the ground, so that at harvest time they get mixed up with the binder, causing much delay in the cutting. The seed of the *wild oat* is covered with long hairs, and is also provided with a long twisted awn, so that in the threshing machine the seeds get matted together into great clumps, rendering it necessary to make frequent stoppages to enable the machinery to run freely. Indeed, a Wiltshire farmer has said that the ordinary couch, onion couch, and wild oat may be classed as A, B, C—awful, beastly, cursed—for the

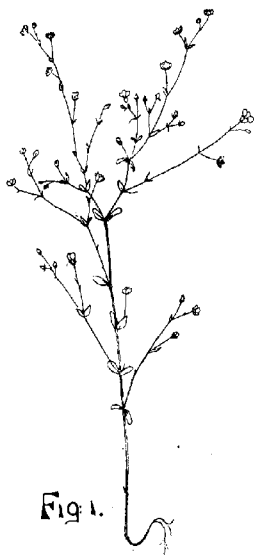


FIG. 1.—*Linum catharticum*
(Purging Flax).

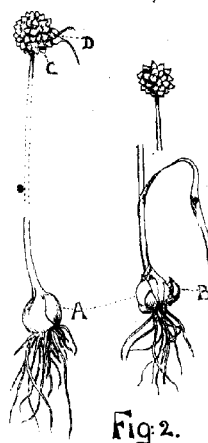


FIG. 2.—*Allium vineale* (Wild Onion).
A, Bulb; B, Underground bulbil; C, Heads of aerial bulbils, two of which (D) have sprouted.

wild oat is more cursed than anything else grown on a farm, for it spoils the crop, spoils the sample of corn, and gets into the threshing machine parts till it blocks every outlet.

2. In some cases trouble arises in the stack owing to heating caused by such plants as *cornbine*, and considerable loss may be incurred unless special precautions are taken.

3. A few weeds are poisonous, or at least very disagreeable, either in smell or taste. Most of these are associated

with pastures and meadow land, but a few occur on arable land. The *corn cockle* bears seeds which may cause poisoning in stock or human beings, and which, if ground up into flour, give the bread a dark colour and bitter taste. The *wild onion* (Fig. 2) occasionally appears in quantity, usually on very heavy land, the flowers are either interspersed with or replaced by bulbils which are very difficult to separate from the threshed corn, so that there is danger of them passing through the mill and giving the flour a pronounced flavour of garlic. The *purging flax* (*Linum catharticum*) (Fig. 1) causes illness, or even death, to animals that have access to any quantity of it.

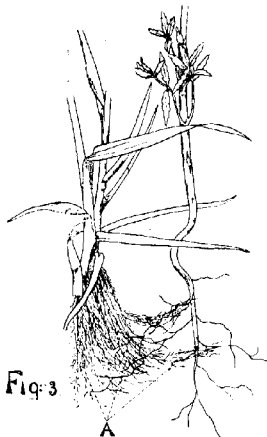


FIG. 3.—*Rhtnanthus Crista-galli* (Yellow Rattle) on barley.

A. Points at which the Yellow Rattle is attached to the barley roots.



FIG. 4.—*Cuscuta europaea* (Dodder) on clover.

A. Twining stem attached to the clover stem by suckers.

Although this plant is rarely seen on plough land, it might possibly be seeded down in temporary pastures and so be introduced into hay.

4. Parasitic plants are happily few in number, but they are able to do a great deal of damage if they get a hold under favourable circumstances. They attach themselves to the roots or stems of other plants by means of suckers or haustoria, and instead of deriving their own nutriment from the soil and air, they rob their hosts of elaborated food material and drain their very life from them. Clover is very apt to be attacked in this way, as the *dodder* (Fig. 4) weaves its web over the plants

above ground, sending suckers into its aerial stems and often killing the plant altogether, while the *broomrape* (Fig. 5) fastens on to the roots and flourishes so well that the second cut of the clover is often completely ruined. Other leguminous plants, as lucerne and sainfoin, are also much affected by the broomrape, but as the latter is a late growing species the first crop usually escapes, while the second and later cuts may be most seriously damaged.

The parasitic nature of *bartsia* (Fig. 6) is less well recognised, as it rarely occurs in sufficient quantity to do damage. This season a good deal has been present in a wheat crop at Rothamsted, and the intimate connection of the parasite with the crop plant was abundantly demonstrated. The connection is from root to root, and wheat plants with *bartsia* at foot were weak in growth with few tillers. The peculiarity of this parasite is that sometimes it grows plentifully on the headlands and paths (where it probably attaches itself to various other grasses) without showing any inclination to invade an adjacent corn crop.

The *yellow rattle* (Fig. 3) is very frequent on pastures, and although it is rare on arable land, it is capable of doing great damage if it does occur. It will attach itself to the roots of barley, and so weaken its host that little growth is possible, and the formation of ears is entirely prevented. Acres of land are occasionally infested in this way, and great loss of crop invariably results.

Owing to their peculiar mode of living these parasitic plants can be satisfactorily dealt with provided seed formation is entirely prevented. Seeds are produced very abundantly, so that if this endeavour be foiled the propagation of the plant is effectively hindered.

ASSOCIATION OF WEEDS WITH SOILS.

For some years past surveys have been made of the weeds of arable land in different parts of England, and it has been found that a considerable number of plants, probably from one to two hundred, occur under tillage conditions. Many of these, however, are merely local or occasional in occurrence, those that are of actual significance as weeds being comparatively few, though so widely spread that it is evident that ploughed land forms an ideal habitat for them, providing exactly the circumstances that best suit these plants. It is very interesting to notice that many of these weeds are becoming more or less universal in distribution over the whole world. In many parts of Australia, Tasmania, and Canada, for instance, our common British weeds are quite unknown in the virgin country as yet untouched by cultivation. Directly such land comes

under the plough the native plants tend to disappear more or less completely, as they resent interference, and many of our common weeds, as thistle, dock and fat hen, make their appearance. The seeds are evidently introduced with the crop seeds, and they are able to take advantage of the very conditions which kill out the native plants. Some of these introduced weeds spread so rapidly that legislation has had to step in for their suppression, and in some colonies, as in Victoria, such weeds as thistles are "proclaimed," and must be kept in check under pain of prosecution.

An interesting instance of the rapidity with which typical arable weeds establish themselves was seen this year at Hucknall Torkard in Nottinghamshire.* Some pasture of old standing, on heavy clay soil, was ploughed up last year, and instead of being fallowed for a year was sown to oats, partly in October, partly in January. In those furrows in which the old turf had not been completely overturned or buried some of the typical pasture plants still survived, but over the greater part of the field—everywhere that the ploughing had been quite thorough—hardly any plants from the old pasture were to be seen, but quite a large population of typical arable weeds had already established themselves. Such weeds as charlock, sowthistle, fat hen, knotgrass, spurrey, willow-weed, black bindweed, and fumitory—all typical of plough land—were present in more or less abundance, while of the typical pasture plants only a few isolated specimens of bird's foot trefoil, ragwort, daisy, and dandelion remained, so that the very conditions that killed out one set of plants provided the most favourable opportunity for another set of weeds to establish themselves.

It is thus evident that to a great extent the mere conditions of cultivation determine which plants are likely to prove troublesome as weeds. The actual distribution and abundance of these weeds, however, depends largely upon the nature of the soil, with which the water supply is closely connected. It must be remembered that it is impossible to draw hard and fast lines between the different soils, that there is infinite variety, and that one type of soil may grade rapidly into another, sometimes within the limits of a single field, while the varying amount of lime present has also a most important bearing upon the growth of crops and weeds.

The relation between weeds and the soils on which they grow can only be determined by comparison of records from different districts, in order that a true estimate may be made of local peculiarities and variations. Surveys have been made in parts of Bedfordshire, Wiltshire, Bath district, Norfolk, Nottinghamshire, and Derbyshire, and sufficient information is now

available to permit of a certain balance being struck, which may possibly need modifying in the future if other districts are examined.

Comparatively few weeds are definitely associated with a single type of soil, but when this does happen it is usually of much significance. The majority of weeds are to be found to some extent on most soils, but in many cases they have such a preference for one type or another that they may be considered to be characteristic of a certain soil. Others are of universal distribution and are found everywhere, whether it be on sand, clay, loam, or chalk. While this broad distinction holds good, local peculiarities occur, so that a plant that is usually of wide distribution may be confined to or absent from a particular soil in a district, or may be so abundant as to be characteristic of some particular type of soil. The *shepherd's needle* will apparently grow on any soil, but it is characteristic of chalk in Wiltshire, absent from chalk in Norfolk, absent from sand in Bedfordshire, absent from peat in Nottinghamshire, while the *field forget-me-not* is never seen on sand in Notts. (being chiefly found on heavy soils), whereas in Norfolk it is usually found on sand, and in Wiltshire it is confined to chalk. Although *chickweed*, *horsetail* and *shepherd's purse* are really universal in distribution, yet in Nottinghamshire the two former are more common on the heavier soils, while the latter is more frequent on light soils such as sand and gravel. Many other instances could be cited, but with due reservation on account of these local differences the commoner arable weeds can be classified according to the soils they frequent.

1. Some of the most common and troublesome weeds are *indifferent to the soil variations*, a fact which largely accounts for the unenviable position they hold in the farmer's estimation. Curled dock, creeping thistle, mayweed (*Matricaria inodora*), knotgrass, shepherd's purse, chickweed, horsetail, ivy-leaved speedwell, couch grass, and groundsel occur everywhere, and the willow weed only seems to be absent from chalk. Of the less common weeds the following are noticeable: wild radish, broad-leaved dock, dandelion, shepherd's needle, poor man's weather glass, mouse-ear chickweed, white campion, ribwort plantain, and wall speedwell; the hemp nettle is found on all soils but chalk.

2. Some weeds, although of general distribution, are more closely associated with certain soils, without being really characteristic of them.

(a) Weeds that are more general on *medium and heavy land*: Common orache (*Atriplex patula*, often confused with the true fat hen, *Chenopodium album*), charlock, bindweed, corn buttercup, creeping buttercup, sowthistle, coltsfoot,

annual meadow-grass. The wild mint is found on any soil, but is really more of a true denizen of heavy soil.

(b) Weeds that are more general on *lighter soils and sand*: creeping twitch, fat hen, fumitory, black bindweed, small nettle, parsley breakstone. The wild pansy is also found on most soils, but is usually much more confined to very light and chalky soils.

3. The plants that are characteristic of *heavy loam and clay* are few in number and are usually sparse in distribution. The flora of such soils is usually made up of the more universal weeds, with only occasional representatives peculiar to the soil, the only plant that seems to occur in appreciable quantity under ordinary circumstances being cleavers. The other heavy land plants are dwarf spurge, greater plantain, nipplewort, silverweed, bartsia, black bent, and hogweed.

4. The weeds characteristic of *very light and sandy land* have a distinct character of their own, as there are a few plants which only flourish on such soils and which flourish exceedingly if opportunity offers. On land that is not deficient in chalk the poppy (*Papaver Rhæas* and *P. dubium*) grows luxuriantly, particularly on sand and gravel, where it is frequently the dominant weed. Most sand land, however, is more or less deficient in lime content. Where this is the case the characteristic weeds are usually spurrey, sheep sorrel, annual knawel (*Scleranthus annuus*) and occasionally on damper soil the corn marigold (*Chrysanthemum segetum*). The last named plant occurs very plentifully on the damper parts of the Bagshot sands, near Woking, and also in some parts of the Trent valley, while spurrey shows its preference for acid soil conditions by its prevalence on the acid plots at Woburn. Although a large number of other weeds occur they are all more or less alien and are utterly dominated by the plants mentioned, which form a most characteristic flora. Field alkanet, stork's bill, silver hairgrass and cudweed (*Filago germanica*) are closely associated with sand, while white mustard, corn chamomile, small poppy, soft crane's bill, and petty spurge frequent the light loams in addition to sand.

5. The weed flora of chalk soils is very indeterminate, as so many species that are apparently characteristic of chalk in one neighbourhood prove to be generally distributed elsewhere, and also plants that are altogether absent from chalk in some places are quite prevalent on it in others. A very great variety of weeds occur on chalk lands, but the association of the weeds with the soil is not constant nor clearly defined. Many of the weeds commonly found on sandy land are of usual occurrence on chalk, with, of course, the exception of the lime-hating spurrey, sheep sorrel, knawel, and corn marigold. The factors

governing the distribution of weeds on the chalk soils are at present imperfectly understood, and it rather looks as though the weed flora on the chalk may be more or less peculiar to the different districts, the composition varying with the locality. At any rate, it is impossible at present to earmark species as characteristic of chalk, other than those which occur on the calcareous sands.

In some places soils occur that are somewhat unusual in type. Of special interest in this connection is the Carr soil, which is a peculiar woody peat, quite different from the ordinary fibrous peat. Everton Carr, in Nottinghamshire, provides a good instance of such woody peat under arable conditions. The weeds are less varied than on most other soils, but those that are typical of damp and sour soil flourish well, spurrey, willow-weed, and sheep sorrel occurring in quantity. Hemp nettle, wild pansy, and fat hen are also much at home, but otherwise only about a dozen other weeds occur, and these in small numbers. It is probable that the peculiar nature of the soil encourages a few species, but makes an effective bar against most of the typical weeds of ploughed land.

HABITS OF GROWTH OF WEEDS.

The great majority of plants occurring as arable weeds are either annuals or perennials—*annuals*, in which the whole life cycle from the germination of the seed to the production of fresh seed is completed within the compass of a single season, *perennials*, in which the same plant lives on from year to year by means of persistent underground organs. Very few weeds belong to the third class of *biennials*, in which germination and vegetative growth take place in one season, flowering and fruit formation occurring in the second year, and even these few weeds are scarce or of local distribution. This is accounted for by the cultural conditions, as only those plants flourish which are able to pass safely, either as seeds or as persistent underground parts, through the times of upheaval caused by ploughing and cultivation.

The very worst farm weeds are fairly evenly distributed between the annuals and perennials, but the greater number of weeds of all sorts are *annuals*. These depend for their propagation upon seeds alone, and for these plants success in weed life is determined by their adaptability in the matter of seed production. All the annual weeds that are a serious menace to the farmer produce great quantities of seed. Such weeds as fat hen, knotgrass, black bindweed, charlock, poppy, spurrey, and speedwell are practically nothing but storehouses of seed when flowering is over and maturity is reached. The

great aim in life of these plants is seed production, and in most cases they readily adapt themselves to attain their object. If the weather is unfavourable, or other circumstances threaten perfect development, the whole energy of the plant is thrown into the one task of producing flower and seed, at the expense of the vegetative organs. This done, further effort is unnecessary and the plant dies. In this way the most stunted little plants, perhaps only half an inch high, are found to contribute their quota to the total output of seed. In some cases the life of the weed is normally very short, seed production being hastened on as rapidly as possible. The *ivy leaved speedwell* begins to germinate in February or March, starts flowering almost immediately, and often seeds have been ripened and shed and the plants themselves have died and practically disappeared by June. *Fumitory* also tends to seed and die out early, especially if conditions are somewhat unfavourable. The seeds of these annual plants are not only able to germinate readily when opportunity offers, but some of them are able to retain their power of growth for many years when necessary. If they are buried too deeply in the soil growth is impossible, but when they are brought to the surface by cultivation their vitality is but little impaired and they germinate freely. *Charlock* seeds are proverbially long lived, and it is certain that they can endure being buried for many years, though some of the statements as to the actual length of time must be accepted with reserve. In certain districts the idea prevails that charlock will always appear if fresh land is ploughed up, even if it has been under pasture for hundreds of years; also the deep lying subsoil thrown out of new wells is frequently said to be a favourite haunt of charlock. It is, however, certain that when pasture of about thirty years' standing is ploughed up, or when arable fields are cultivated a little more deeply than usual, charlock sometimes makes its appearance, occasionally in great quantity, even though it is normally absent from the fields. Poppy seeds sometimes behave in the same way on favourable soils. It occasionally happens that large quantities of a weed, hitherto insignificant, make their appearance in certain seasons, and it is commonly stated that this is associated with extra deep cultivation which has brought a harvest of buried seeds to the surface, but although a great body of verbal evidence may be obtained, reliable experimental results are not available, so that the behaviour of buried weed seeds under normal conditions of cultivation is not definitely or accurately known.

The life history of these annual weeds provides a clue to the most satisfactory way of eradicating them from farm land. Seed production must be hindered in any way possible and the

soil must be depleted of its stores of buried seeds as opportunity offers. Thorough ploughing, followed by surface cultivation at the right time will give command over most of the annual pests. The seeds should be allowed to germinate but not to begin to flower, as flowering and seeding go on more or less simultaneously. If the surface soil is kept moving the numbers of seeds in the soil will be gradually lessened by germination, but the young plants will not have opportunity to form fresh seed to make good the deficiency. Special methods of treatment are sometimes adopted, which will be dealt with later.

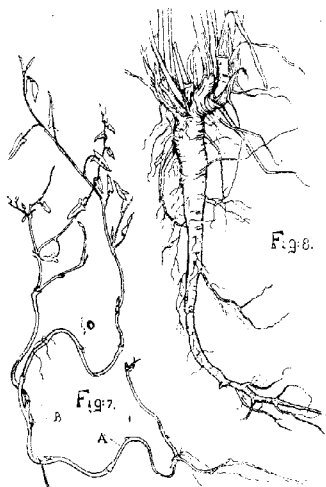


FIG. 7.—*Convolvulus arvensis* (Bindweed).
A, Creeping underground stem; B, Bud
in axil of scale leaf.

FIG. 8.—*Rumex crispus* (Curled Dock),
showing thick perennial root.

The *perennial weeds* present a much greater problem to the farmer than do the annuals. On the whole the most troublesome species, as thistle, coltsfoot, dock, bindweed, (Fig. 7), horsetail (Fig. 9), and twitch are much more general in distribution, not being so localised upon certain types of soil as are some of the worst annuals like poppy and spurrey. The perennials live on from year to year by means of persistent underground parts, which may either be specially developed roots, as in dock (Fig. 8), or stems modified in various ways, as in couch, coltsfoot, and horsetail. In such plants as the



FIG. 5. *Oxydanthus minor* (Droemrapee) on lucerne (left) and on sainfoin (right). The large sainfoin plant shows the normal growth compared with that made in the presence of the parasite.



FIG. 6. *Oxydanthus minor* (Droemrapee) on lucerne (left) and on sainfoin (right). The large sainfoin plant shows the normal growth compared with that made in the presence of the parasite.

couch (Fig. 11) these underground stems are long, thin and white, bearing scale leaves. They creep along below the surface of the ground, and in the early part of the year throw up the typical green shoots into the sunlight. In other cases, as *coltsfoot* (Fig. 10), the subterranean stems or rhizomes are much thicker and run straight down into the soil as far as possible, and then, if a subsoil unsuitable for growth is reached, they turn along at an angle and run more or less parallel to the

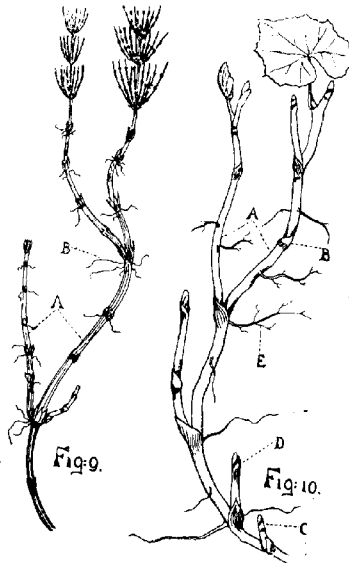


FIG. 9.—*Equisetum arvense* (Horsetail).
A, Branching underground stem; B, Bud in axil of scale leaf.

FIG. 10.—*Tussilago farfara* (Coltsfoot).
A, Branching underground stem; B, Scale leaves; C, Bud; D, Bud just elongating; E, Roots.

surface of the soil, but deep down in it. Coltsfoot may run for several feet in this way. In a specimen at Rothamsted nearly four feet of stem was dug up, and the rhizome was still about a quarter of an inch across at the point of severance. During the growing season this plant sends two distinct kinds of shoots above ground, those which appear first bearing flowers only, the later ones producing leaves and not flowers. As a general rule, however, the perennials form only one type of aerial shoot

which bears both leaves and flowers, as in bindweed and thistle.

The great function of the subterranean parts is to carry the plant on from one year to another, and to this end they are specially adapted to serve as storehouses of food material. During the summer more plant food is formed by the green leaves than is needed to nourish the plant at the time, and the excess is carried down and stored below ground. When winter comes the green shoots die away and the plant rests for a time. With the spring, active life is renewed, and the stored-up food is utilised to develop new shoots which rise up above ground

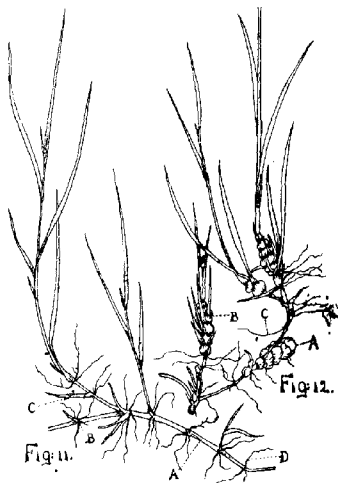


FIG. 11.—*Triticum repens* (Couch grass).

A, Underground stem; B, Scale leaf with bud in axil; C, Bud just elongating; D, Roots.

FIG. 12.—*Arrhenatherum avenaceum* var. *bulbosum* (Onion Couch).

A, Knotted underground stem; B, Scale leaves; C, Roots.

to begin the whole cycle again. The underground shoots are often provided with small scale leaves and buds, so that even if they are detached from the parent plants, as happens in ploughing and cultivating, each little piece is able to strike out for itself and establish a new plant, a fact which makes the extermination of these weeds a matter of peculiar difficulty. But, unfortunately, the perennial weeds have two strings to their bow, as they form seed more or less freely, often rivalling the annual plants in its abundance. Thistles, coltsfoot, dock,

sowthistle, all form numerous seeds, which are, moreover, specially adapted for distribution, as they are provided with small wings or parachutes of fine silky hairs, by means of which they are carried far and wide by the wind. It is sometimes said that thistle seeds will not germinate and grow, but this is not the case. In an experiment on the vitality of buried seeds carried out this summer thistle seed germinated in soil taken from four inches below the surface. The probable origin of the popular idea is in the fact that many of the thistle heads fail to set their seed, but a certain proportion of seed is formed and will start into growth under favourable circumstances, so that it is exceedingly dangerous to trade on this belief and to allow the thistles to flower freely.

Whereas with the *annual* weeds everything turns on the successful production of large numbers of seeds, which are usually scattered more or less in the immediate neighbourhood of the parent plant, with the *perennials* various contingencies are provided for, and failure in seed production does not necessarily result in the disappearance of the species.

It is necessary fully to understand the life history of these perennials if war is to be successfully waged against them. Good growth of green shoots is essential if a sufficient supply of food is to be stored up over the winter, so usually these plants devote the early part of the season to pushing ahead with strong green stems and leaves, making as lusty growth as is possible. After some long period of vegetative growth, flowers and seeds are formed, and then the shoots begin to die down. There is not the same haste to form seeds as is shown by the annuals, because it is not so vitally important to the existence of the future plants. Coltsfoot is a great exception among the perennials in that seed production is completed before the leafy shoots begin to show above ground.

Successful procedure against perennial plants depends very largely upon the advantage that is taken of their mode of life. Seed production must be prevented and an attempt must be made to get rid of the underground parts, either by removal or starvation. Docks and other weeds that form a strong, simple tap root can be pulled or dug up bodily from the soil of arable fields, with little danger of leaving stumps that will grow again, so that if seeding is not allowed, a clearance can be made if sufficient labour is available. The weeds with long underground stems are far more difficult to deal with effectively. Obviously, no seed formation must be allowed, but this is not sufficient. If the green shoots are left to grow well on into the season, even though no flowering occurs, stores of food materials are being passed down below ground, so that even though the shoots be cut off at this time, no exhaustion of the

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underground stem is achieved. If, however, the shoots are allowed to make a fair start above ground at the expense of the stored up food, and are then cut off fairly early in the season, there is no time for the food store to be replenished, and if the new shoots that spring up are persistently kept under, the plants will gradually die out from lack of the stores necessary to carry them through the winter. Ploughing and harrowing provide opportunities for removing much of the underground parts, which are cut up and brought to the surface. It should be remembered that small pieces can grow into fresh plants, and also that the rhizomes are remarkably resistant to adverse circumstances and will often withstand desiccation and frost in a most unexpected manner, so that the removal and destruction of the ploughed-up weeds should be as thorough as possible if a real clearance is to be made.

TREATMENT OF SPECIALLY OBNOXIOUS WEEDS.

The arable weeds of this country that are more or less generally distributed include about 150—200 different species, but of these only about twenty are in themselves a serious menace to the farmer, though a few others are of local significance.¹ The weed surveys have shown that the campaign against weeds is often specially directed against individual species rather than against the weeds as a whole, as in the attempted eradication of the worst pests the less harmful plants are automatically kept in check.

Special attention and individual treatment are afforded to the following weeds, which often threaten the very existence of the crops if they are allowed to get the upper hand.

Charlock or Kellock.—Several plants are classed under this heading, all being varieties of mustard or cabbage. White mustard (*Brassica alba*) and charlock proper (*Brassica arvensis*) are the most frequently found, but smooth-leaved charlock (*Brassica campestris*) and black mustard (*Brassica nigra*) occur locally. The seed retains its vitality for a long period, so that even if a field is apparently cleared the weed may reappear after a lapse of several years if the land is ploughed rather more deeply so as to bring the seed to the

¹ Twitch (*Agrostis stolonifera*), common orache (*Atriplex patula*), charlock, fat hen, creeping thistle, bindweed, horsetail, poppy, knotweed, black bindweed, sheep's sorrel, curled dock, groundsel, spurrey, sowthistle, chickweed, couch (*Triticum repens*), ivy-leaved speedwell (*Veronica hederifolia*), large field speedwell (*V. tournefortii*), and coltsfoot make up the twenty. Shepherd's purse, wild carrot, fumitory, cleavers, white campion, annual meadowgrass, creeping buttercup, annual knawel (*Sceleranthus annuus*), and false oat (*Arrhenatherum avenaceum*, var. *bulbosum*) are occasionally of local significance.

surface. Even on badly infested land, charlock is rarely plentiful in autumn sown corn, as the crop gets an early start and hinders the development of the weed, but spring sown crops are liable to contain much of it, as the weeds are able to get a fair start free from the competition of the crop. It is a good practice to work the land as early as possible, leave it for a month, and then to work it again before seeding, to kill out the weed seedlings that have sprung up. Hoeing and hand pulling from among the crop will help to keep down charlock, but the most effective way of dealing with it is to spray with solutions of copper and iron sulphate. Charlock is very susceptible to the action of these poisons when they are applied as a fine spray, and as they are retained by the rough surface of the leaves the plants are readily killed, given favourable circumstances. Spraying, to be surely effective, needs to be done in fine weather, as if much rain follows too soon after the operation the poison is washed off and the weeds remain unharmed or only slightly injured. Cereal crops are not hurt by the spray unless it is too strong, as the long narrow leaves are able to throw the poison off instead of holding it as the charlock does. Generally speaking it is best to spray charlock when it is quite small, as the young plants are tender and more easily killed, and the crop is less fully developed and is able easily to overcome any slight check that may ensue. If early treatment is impossible or unsuccessful owing to rain, late spraying may meet with success. In an instance brought to the writer's notice a field of very advanced charlock in full flower was sprayed in mid-July with a solution of 1 part copper sulphate in 25 parts water. The following day the leaves were killed, though the flowers looked as gay as ever, but within a week the plants were dead in spite of heavy rains which followed the spraying. The smooth-leaved charlock, which also occurred in some abundance, was only crippled, not killed, as the smooth waxy leaves were able to throw off much of the poison. Incidentally, such weeds as thistles, speedwell, and coltsfoot were much damaged, while fat hen remained unhurt.

Coltsfoot (Tussilago Farfara).—Many people fail to realize that the leaves and flowers of this plant are connected with one another, as the flowers appear so early in the year and die away before the leaves develop. Consequently the seeds are allowed to ripen and the weed gets far more widely distributed than would otherwise be the case. Coltsfoot is troublesome to deal with on account of the very strong development of the underground stems, which run so deep and for such long distances that it is difficult to get them out of the soil in the ordinary course of farm operations. The opinion is generally

held that wherever coltsfoot is present in any quantity the crop suffers badly and may even be killed out. At first sight this seems to be due to the fact that the broad flat leaves of the coltsfoot, pressed close to the ground, smother out all other plants within their radius. This is undoubtedly the case with spring sown crops, but further inquiry shows that the injury also occurs with certain autumn sown crops which are well forward before the coltsfoot leaves appear at all. There is no satisfactory explanation of this, but it may be that the lusty growth of this plant makes such demands upon the soil that the latter is greatly impoverished, so that the crop grown on the same area is short of food and suffers from semi-starvation, even when the coltsfoot leaves are not visible. No satisfactory method of eradication is known—it is best kept under by keeping the soil moving by surface cultivation. It might be possible to starve it out gradually if the tops could be cut off as they developed, so as to exhaust the underground stem, but the cereal crops are usually too big to work with the hoe just at the critical time, so that this method cannot often be put into practice. It is, however, possible to prevent seeding by cutting off the flower heads as soon as they appear in February or March.

Dock.—*Curled dock* (*Rumex crispus*), and *Broad-leaved dock* (*Rumex obtusifolius*).—The curled dock is very widespread in distribution, the broad dock being more local as an arable weed, though it is very common in waste places. Both plants are frequently spread by manures, especially when night soil or town manure are used. If town manure is bought in the autumn and clamped over the winter there is less danger of introducing weeds, as many of the seeds present in the manure are destroyed by incipient germination due to the heating of the clamp, or are poisoned by the ammonia generated in the heap. It is also possible that the seeds lie dormant in the soil and may be turned up by extra deep ploughing. Hoeing and cultivating for these weeds are worse than useless, for the underground parts are left and simply shoot up again at a later date. Docks should be hand pulled or grubbed out, so as to remove them bodily from the land. The common practice is to draw the docks, to throw them into heaps by the hedges at the sides of the fields and to leave them there to rot. As the docks are usually in bud or even flower before they are drawn this is a most harmful practice, as the plants continue to grow to some extent at the expense of their stout rootstocks, and ripen their seeds, thus defeating the very object it was desired to attain. Docks should be collected in heaps and burnt to avoid danger of seeding, the ashes being spread on the land afterwards.

Fat Hen.—Two distinct weeds are sometimes classed under this head, fat hen proper (*Chenopodium album*) and common orache (*Atriplex patula*). It is sometimes erroneously thought that the spreading plants of orache are merely fat hen that has been injured or cut off at an early stage and that has developed spreading shoots in consequence. Fat hen as an arable weed is usually fairly small, up to eight inches high, but sometimes in favourable situations it will grow into great bushy plants three feet high, with stems an inch or more across. It is usually not so plentiful as to be of great significance, but in some places it is a very harmful weed. Sometimes if it be allowed to get ahead of the farmer and to grow up rank and strong, it not only injures the crop with which it is associated but also damages the succeeding one; apparently it has a very exhausting effect on the land if it is present in quantity. In other places the injury seems to be confined to the associated crop. As the weed is an annual it can easily be dealt with in the ordinary course of cultivation, by ploughing first and then working the land when the seedlings have started into growth.

Poppy (various species of Papaver). This is a troublesome weed on very light or sandy land on which a fair supply of lime is available. The seeds tend to lie dormant and to come to the surface with deeper ploughing. Spring cultivation will kill out many of the seedlings and applications of salt are sometimes useful. On a farm visited near Worksop, on soil of a gravelly type, half a ton per acre of salt is applied to wheat at the end of March or the beginning of April and harrowed in twice, and is said to be very effective as a means of getting rid of the poppies.

Spurrey (Spergula arvensis). This is characteristic of light sandy land with a deficiency of lime—it is rare to find fields with an abundance both of poppy and spurrey, on account of the difference in the lime requirement of the plants. Spurrey tends to grow so plentifully that it carpets the ground and smothers the crop more or less effectually. Unless the crop gets a fair start over the weed it stands a poor chance of making good growth. Deep ploughing (9 inches) in winter cleans the sandy land well, and spring cultivation will prevent much seed production. Judicious applications of lime will often help to keep the spurrey within bounds, even though it may not be wise or profitable to apply sufficient lime really to eradicate the weed.

Creeping thistle (Cirsium arvense). This is one of the most widespread of weeds, being as abundant on pastures as on arable fields. The prevention of seeding and starvation of underground stems will gradually eradicate thistles from cultivated land, though they are very tenacious of life and

reassert themselves if hostile operations slacken. Deep ploughing in winter allows the frost to kill out much of the underground stem, and if the land is well worked in the spring much can be removed from the soil. In some cases if the weed is very prevalent it is well to plough three or four times in a season and to follow up the ploughing by persistent spudding of the thistle shoots as they appear. In very bad cases, and on pastures, cutting with a lawn mower seems to be effective in killing the plants. During the growing season thistles should be constantly spudded out to avoid any possibility of flowering.

Twitch and Couch.—Various plants are known under these names, any grass that spreads over the surface of the ground being called twitch in the locality in which it occurs. The most common of these are couch (*Triticum repens*) and twitch (*Agrostis stolonifera*). The former is supplied with creeping underground stems which send up green shoots, and the latter has much finer stems which creep along either above ground or just below the surface. The methods of eradication are various, anything and everything is done which will help to get rid of these weeds, as they are exceedingly troublesome. After ploughing the weed is collected with the harrows, gathered up by tools, handpicked, cleared off the land at all costs. On light sandy land the gathered twitch is often put into heaps and burnt, the ashes being then spread over the fields. On heavy land it is not possible to get it dry enough to burn *in situ*, so sometimes the twitch is cultivated out, carted away, mixed with lime in heaps and left to perish. Under no circumstance should the stems of couch be allowed to lie on the land after cultivation, because each little piece is capable of growth and can give rise to a new plant, so that neglect to remove the weeds may cause an increase in the pest.

In addition to the more or less ubiquitous weeds there are a few that are of local occurrence and which sometimes cause considerable annoyance. Shepherd's purse, wild carrot (in temporary pastures), fumitory, cleavers, annual meadow grass, knawel, and creeping buttercup are among the chief of these, but it rarely happens that special measures are needed against them other than occasional extra hoeing. Sometimes the fumitory is exceedingly plentiful and may necessitate the hand hoeing of a cereal crop if loss is to be avoided. Knotty couch (Fig. 12) is also troublesome at times in some places, for it spreads rapidly and is difficult to eradicate as each joint of its knotted underground stem will grow into a new plant if broken off. Ploughing to bring the stems to the surface, followed by hand-picking to clear them off in as unbroken a condition as possible is recommended.

Apart from these special cases the other weeds, as individuals, are comparatively unimportant, their significance arising from the fact that they *are* weeds, *i.e.*, plants other than the crop sown, so that the sum total of them do damage by robbery of various kinds. The general tillage and the special measures adopted against the more important weeds serve to keep the others in check.

INFLUENCE OF DIFFERENT METHODS OF FARMING
UPON WEEDS.

The effective suppression of weeds is a factor that has much to do with success in farming, and the various schemes of farm practice aim at the greatest possible efficiency in this respect. The general practice of growing crops under rotation provides good opportunities of cleaning the land, particularly when root or green crops such as cabbages, clover or lucerne have a prominent place in the rotation. The roots and cabbage demand thorough tillage so that the development of weeds is checked in their early stages, while such crops as clover and lucerne, if well grown, smother out the weeds and so aid in their suppression. The continuous growth of cereals year after year does not permit of thorough cleaning of the land, and the danger arises that some weed that is quite insignificant under rotation will gain such a footing that serious damage is caused. The Broadbalk field at Rothamsted has been under wheat for over seventy years and is now infested with black bent (*Alopecurus agrestis*) to such an extent that even hand-pulling at great expense does not serve to eradicate it, and fallowing has had to be resorted to in order that summer cultivation may be carried out. When a weed threatens to take command of the situation to this extent a change in the rotation or some alteration in tillage will often provide circumstances that are less favourable to the spread of the weed, so that the farmer can combat it more successfully. Careful observation of the habits of plants will often give the clue to the best means of dealing with them effectively.

The nature of the soil and the system of cultivation have most to do with determining the variety and abundance of the weeds, but the manures also play a smaller part. Farmyard manure, town manure, and night soil are vehicles whereby large quantities of weed seeds are sometimes transferred from one place to another, often over long distances. By this means fresh weeds may be introduced into a district, and if circumstances be favourable the intruders may develop into serious pests if they are not dealt with promptly at the very first. No risks should be taken, but special care should be devoted to weeding when manure has been obtained from other localities.

On soils that are of a sour nature or that are at all deficient in lime content the application of chalk or lime acts on the weed flora by diminishing the quantity of some species and possibly increasing others. Reliable information on this point does not seem to be available, but it is certain that in many cases where spurrey is present in great quantity liming the soil tends to reduce its abundance, though it is rarely practicable or advisable to apply so much lime that the plant is really eliminated. It is sometimes said that the mayweed is killed out by lime, but the evidence is conflicting. The several plants known as mayweed are not easily distinguished from one another except by a trained observer, and it is possible that one species, not discriminated from its allies, is adversely influenced by liming, while the others are not affected.

The influence of artificials other than lime on the weeds is not well marked. At Rothamsted the continuous manuring of wheat year after year with the same fertiliser shows that the weeds are affected, some being encouraged and others killed out by the same combination of manure. In ordinary farm practice, however, the artificials are generally used to supplement farmyard manure, and they are applied according to the requirements of the individual crops, not in definite quantities year after year on the same land. Consequently it is difficult to say that the increase or decrease of any weed is the direct result of any fertiliser used, although it is probable that each application does have some effect, either adverse or beneficial, upon the development of the weeds.

Weed seeds are not only introduced with manure but to an even greater extent with the crop seeds. Seed should be carefully inspected before purchase and a purity guarantee obtained, as untold harm may be done by the presence of weed seeds, as for instance, dodder or broom rape in clover seed. It is far better economy to pay a high price for perfectly clean seed of high germination than a very low price for seeds contaminated with weeds and of a low capacity for growth.

Although special measures have occasionally to be adopted on account of the prevalence of specially harmful weeds on the land, yet as a rule general methods of tillage will serve to keep weeds in check provided they are properly carried out. The time honoured way of thoroughly cleaning the land is to bare fallow it for a year, ploughing when the crop is removed and several times during the season, so that frost, rain, air and sun are able to work their will on the soil, improving its texture and fertility, while the weeds find opportunity to start into growth only to be ruthlessly cut down by the plough long before maturity is reached. Under present conditions a year's fallow can rarely be afforded unless the land is so foul that all

other methods of cleaning it are useless. Root crops, with their constant surface cultivation, provide a very good substitute for a bare fallow, as the land is cleaned without the loss of a crop. A "pen fallow" or "backend fallow" is another useful method where labour can be obtained at the right time. Land under temporary pasture is ploughed up after the first cut, the aftermath being sacrificed. If a steam plough is available two ploughings may be made. The land is then left till October, when it is thoroughly worked and seeded with wheat. The seedling weeds will have been destroyed and the crop gets the first start and smothers out later weeds which put in an appearance.

It is always well to cultivate the land as soon as possible after cropping, to get it ploughed up "well in the back end of the year," so as to lay it open to the action of the winter's frosts, which kill out many weeds. This is specially important on heavy land, as if ploughing is left too late the soil gets so wet that it is impossible to get on to it until the land dries out in spring, so that valuable time is lost, and while the crop suffers from the disadvantage of late sowing and imperfectly prepared land, the weeds have a good chance of getting ahead without undue interference. The ploughing up of balks and cultivation up to the hedgerows is advisable, as such weeds as couch and twitch are common to hedgerow and field, and find useful harbourage in the balks from which they can invade the arable land. Also by this means much land is reclaimed for use, which is a matter of great urgency at this time of national crisis when every acre needs to be taken advantage of to the uttermost.

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GLOSSARY OF WEEDS MENTIONED IN PAPER.

<i>Agrostis stolonifera</i> .	Twitch, Watergrass, Black-top Grass.
<i>Aira caryophyllea</i> .	Silver Hair-grass.
<i>Alchemilla arvensis</i> .	Parsley Breakstone.
<i>Alopecurus agrestis</i> .	Black Bent.
<i>Anagallis arvensis</i> .	Poor Man's Weather-glass.
<i>Anthemis arvensis</i> .	Mayweed, Corn Chamomile.
<i>Anthemis Cotula</i> .	Stinking Mayweed.
<i>Arrhenatherum avenaceum</i> var. <i>bulbosum</i> .	Onion Couch, Pearl Couch, Knotty Couch.
<i>Atriplex patula</i> .	Common Orache (Fat Hen).
<i>Avena fatua</i> .	Wild Oat.

<i>Bartsia Odontites.</i>	Red Bartsia, Red Rattle.
<i>Bellis perennis.</i>	Daisy.
<i>Brassica alba.</i>	Charlock, White Mustard.
<i>Brassica arvensis.</i>	Charlock, Ketlock, Wild Mustard.
<i>Brassica campestris.</i>	Charlock, Ketlock.
<i>Brassica nigra.</i>	Charlock, Black Mustard.
<i>Capsella Bursa-pastoris.</i>	Shepherd's Purse.
<i>Cerastium vulgatum.</i>	Mouse-ear Chickweed.
<i>Chenopodium album.</i>	Fat Hen, Mutton Tops, Lamb's Quarters.
<i>Chrysanthemum segetum.</i>	Corn Marigold.
<i>Cirsium arvense.</i>	Creeping Thistle.
<i>Convolvulus arvensis.</i>	Bindweed, Cornbine.
<i>Cuscuta europæa.</i>	Dodder.
<i>Daucus Carota.</i>	Carrot.
<i>Equisetum arvense.</i>	Horsetail, Cat's Tail, Toadpipe, Hosepipe, Joint Grass.
<i>Erodium cicutarium.</i>	Stork's Bill.
<i>Euphorbia exigua.</i>	Dwarf Spurge.
<i>Euphorbia Peplus.</i>	Petty Spurge, Wee Gweedie.
<i>Filago germanica.</i>	Cudweed.
<i>Fumaria officinalis.</i>	Fumitory.
<i>Galeopsis Tetrahit.</i>	Hemp Nettle, D. Nettle.
<i>Galium Aparine.</i>	Cleavers, Clider, Heriff, Robin-run-the-hedge.
<i>Geranium molle.</i>	Soft Crane's Bill.
<i>Heracleum Sphondylium.</i>	Hogweed, Haletrot.
<i>Lapsana communis.</i>	Nipplewort.
<i>Linum catharticum.</i>	Purging Flax.
<i>Lotus corniculatus.</i>	Bird's Foot Trefoil.
<i>Lychnis alba.</i>	White Campion, Cockle.
<i>Lychnis Githago.</i>	Corn Cockle.
<i>Lycopsis arvensis.</i>	Field Alkanet.
<i>Matricaria Chamomilla.</i>	Mayweed, Corn Chamomile.
<i>Matricaria inodora.</i>	Mayweed.
<i>Mentha arvensis.</i>	Wild Mint.
<i>Myosotis arvensis.</i>	Forget-me-not.
<i>Orobancha minor.</i>	Broomrape.
<i>Papaver Argemone.</i>	Small Poppy.
<i>Papaver dubium.</i>	Poppy, Redweed.
<i>Papaver Rheas.</i>	Poppy, Redweed.
<i>Plantago lanceolata.</i>	Ribwort Plantain, Ribgrass.
<i>Plantago major.</i>	Greater Plantain.
<i>Poa annua.</i>	Annual Meadow Grass.
<i>Potentilla anserina.</i>	Silverweed.
<i>Polygonum aviculare.</i>	Knotgrass, Crabgrass, Stoneweed, Pigweed, Piggrass.

<i>Polygonum Convolvulus.</i>	Black Bindweed, Cornbine.
<i>Polygonum Persecaria.</i>	Willow Weed.
<i>Ranunculus arvensis.</i>	Corn Buttercup, Forking Robin.
<i>Ranunculus repens.</i>	Creeping Buttercup.
<i>Raphanus Raphanistrum.</i>	Wild Radish.
<i>Rhinanthus Crista-galli.</i>	Yellow Rattle, Rattle Basket, Rattle Jack.
<i>Rumex Acetosella.</i>	Sheep's Sorrel, Greensauce.
<i>Rumex crispus.</i>	Dock, Dockum.
<i>Rumex obtusifolius.</i>	Dock.
<i>Scandix pecten-veneris.</i>	Shepherd's Needle.
<i>Scleranthus annuus.</i>	Annual Knawel.
<i>Senecio Jacobæa.</i>	Ragwort, Cankerweed.
<i>Senecio vulgaris.</i>	Groundsel.
<i>Sonchus arvensis.</i>	Sowthistle.
<i>Spergula arvensis.</i>	Spurrey, Sandgrass, Makebeg, Dother.
<i>Stellaria media.</i>	Chickweed.
<i>Taraxacum vulgare</i>	Dandelion.
<i>Triticum repens.</i>	Couch.
<i>Tussilago Farfara.</i>	Coltsfoot, Floatleaf, Clayleaf, Clates.
<i>Urtica urens.</i>	Small Nettle.
<i>Veronica arvensis.</i>	Wall Speedwell.
<i>Veronica hederæfolia.</i>	Ivy-leaved Speedwell.
<i>Viola tricolor.</i>	Wild Pansy.

SPRING WHEATS.

IN this country and in the West of Europe as a whole the majority of the wheats in cultivation are slowly maturing varieties which require to be planted in the autumn or, failing that, as early as possible in the spring. Where they can be sown on a bare fallow a whole twelve months may elapse between sowing time and the end of the harvest. In most of the other wheat-growing countries of the world the varieties grown mature very rapidly, and are rarely on the ground for more than six months.

The cultivation of long-season wheats have two marked advantages. In the first case the autumn months can be used for seed-sowing, consequently leaving the spring, the great sowing time of the year, free for dealing with the other crops, and, secondly, the long-growing season results in larger crops per acre. In hardly any of the other wheat-growing countries of the world will climatic conditions allow of the cultivation of

such wheats, for their growth is rendered impossible by spells of excessively dry or wet weather, or by the fact that the varieties are not sufficiently hardy to withstand extremely cold winters.

Years of specialisation with long-season wheats have made most farmers look with suspicion upon the rapidly-maturing varieties, called for convenience "spring wheats." Where they are sown they are generally looked upon as makeshifts, and it is exceptional to find any one relying upon them for producing the bulk of the wheat crop. Nevertheless, spring wheats are far more valuable than their limited use in this country implies, and when the time comes that wheat averages, year by year, some 35s. to 40s. per quarter, their use will become far more general.

In the event of circumstances being against planting the whole of the wheat area in the autumn, either the first opportunity after the turn of the year is taken to get the seed into the ground or part of the land originally intended for wheat is devoted to oats or barley. Under present conditions, however, it is advisable to grow as much wheat as possible in this country, and the tendency is to do so even at the expense of the other straw crops. The second alternative is consequently ruled out of account.

As a general rule sowing wheat during January is more or less impracticable on account of the weather conditions prevailing then, and one cannot always count upon getting the seed in even in the following month. January sowings offer few advantages over those of February since germination is so delayed by low temperatures that the February sowings often catch up with those made in the previous month.

Broadly speaking, most of the ordinary autumn wheats can be sown up till the middle of February with the reasonable certainty of securing a crop, though naturally this may not prove so heavy or so early as those resulting from sowings in their proper season. But if circumstances make it necessary to defer sowing until a still later date, some consideration has to be given to the variety chosen for the purpose. A wheat requiring a long period for its maturation, such as "Rivett's" wheat, for instance, is obviously unsuitable, and a variety with a capacity for growing rapidly must be sown. Unfortunately there is very little evidence in existence to indicate how late in the spring most of the ordinary autumn wheats can be safely planted. There are two possibilities before a late sowing of any of these wheats. Either it may give a moderate crop which may, however, mature so slowly that it has to be cut, regardless of its condition, in order to save it from the attacks of sparrows, or the crop may fail entirely. The manner of its failure is

peculiar. In the early stages of growth the plant seems perfectly satisfactory, and the vigour of its foliage suggests an abundant, if late, crop. But instead of forming ears at the expected time, the plants continue to produce more leaves, so that the field acquires the appearance of a coarse pasture. Here and there a few ears may be pushed out, but once it has started to "run" there is no chance of its producing a crop—unless possibly it is left until the following season.

At present very little is known with regard to the critical date for sowing, which once passed means that the crop will "run" instead of coming into ear. Weather conditions probably play an important part in determining it, but at the same time there is no question that the different varieties of autumn wheats each have their own critical dates.

Failing more detailed information on this point one may perhaps make the general statement that the latest ripening of the autumn wheats require the earliest spring sowing if "running" is to be avoided. Thus "Rivett" wheat should be sown earlier than "Square Head's Master," and "Square Head's Master" earlier than a rapidly maturing variety like "Red Marvel." The critical date for most of the autumn wheats probably lies between February 15 and March 15. Taking "Square Head's Master" as a typical example there is a considerable amount of evidence from experimental stations indicating that sowings up to mid-February produce crops comparable in yield with those sown in the autumn. Sowings later than March 15 on the other hand usually either fail entirely or at the most result in crops not worth the expense of growing.

One possible exception, namely "Little Joss," should be noted (Fig. 1). In spite of the fact that its distributors recommend that the wheat should be sown as early as possible in the autumn there is good evidence to show that it may be sown comparatively late in the spring with satisfactory results. In the fen country for instance considerable breadths of this variety were sown towards the end of February, 1915, and in one case, to which my attention was called, as late as the end of March with satisfactory results. The yields reported were as follows:—February sown, average 37 bushels per acre, March sown 32 bushels.

But the wheats chosen for sowing after the end of February, or to be wholly safe after mid-February, should belong to the group of spring wheats. There are relatively few of these grown here but if a demand should spring up many could probably be found in various parts of the world or bred especially for our conditions. Their characteristics, as a whole, are little understood. The two features generally associated

with them are firstly rapidity of growth and secondly the poverty of their yield. The rate of maturation varies greatly with the variety. Of those cultivated here some should be sown before the beginning of March, whilst the sowing of others can be deferred, if necessary, until May. Some few are known, but not cultivated in this country, from which two crops can be grown in the year. But the crops are too insignificant to make the varieties worth cultivating. The poverty of the yield of spring wheats is often greatly exaggerated. It is true that on the average the yield is not the equal of that of the autumn



FIG. 1.—“Little Joss.”

wheats though, given a variety suitable for its conditions, the yields are often surprisingly good. In fact crops of 40 bushels per acre are often grown.

It is often assumed that these rapidly maturing varieties have the advantage that they produce better quality of grain than those with a longer period of growth. Whilst certain of the spring wheats are unquestionably of the finest quality this is a characteristic of the variety and not a function of the period occupied by the wheat in growing and maturing its crop of grain. An actual test will illustrate this point. “Nursery”

wheat was sown at approximately monthly intervals from November till April, inclusive, so that for one and the same variety we have considerable differences in the time the crop was on the ground. After harvest the crops were ground and their quality determined by baking trials with the following results :—

Sown November 16	Strength 58
" December 16	" 55
" January 16	" 57
" February 22	" 55
" March 16	" 61
" April 18	Crop abandoned.

Summarising them we may say that the difference in quality between the rapidly grown crop sown on March 16 and the slowly grown one sown on November 16 is negligible.

Experiments made by sowing a spring wheat at monthly, and in some cases shorter intervals, show very clearly that the yield is strikingly dependent on the date of sowing. Any delay in planting, especially after the end of February, is accompanied by a marked diminution of the crop. For example the variety "Red Marvel," sown on February 23, March 20 and April 10, yielded crops of 53, 48 and 32 bushels per acre respectively in a series of trials, carried out under unusually favourable conditions, in Essex in 1911.

The same method of experimenting has also brought out the fact that within certain limits the date of sowing makes comparatively little difference to the date at which the crop is sufficiently mature for harvesting. Thus plots of "Burgoyne's Fife" sown on November 22, February 3, February 24 and March 17 were all harvested, at much the same degree of ripeness on August 11. Later sowings made early in April and early in May failed to catch up with the earlier ones and resulted in distinctly later crops which were so badly attacked by sparrows that they were not left to mature properly.

The varieties of spring wheat of immediate importance are "Red Fife," "Marquis," "Burgoyne's Fife," "April," "Red Marvel," and "Nursery." All of these can, if necessary, be planted after the middle of February with every chance of obtaining a satisfactory crop.

The first three on the list are sharply differentiated from the remainder by the character of their grain. The individual grains are rather small, broad and hump-backed towards the base and they are almost invariably hard and flint-like in texture. Their milling and baking properties are distinctly better than those of any other wheats grown in this country. In fact a good sample of English grown "Red Fife" is practically equal in value to the best of the wheat imported here from Canada. As a set off against the smaller yield of

spring sown wheats the grower can consequently count on a larger price per quarter on account of their excellent quality.

"Red Fife" has beardless, white-chaffed, lax or loosely set ears (Fig. 2); the grain is red, translucent or very rarely opaque, hard and brittle. The straw is a little under the average height, somewhat slender and inclined to be brittle if allowed to become dead ripe. The plants are rather susceptible to the common yellow rust, though damage caused by the disease is rarely excessive.

The value of its grain has led to unusually thorough testing and probably more is known with regard to the behaviour of

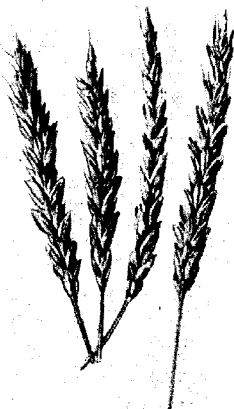


FIG. 2.—"Red Fife."

"Red Fife" under various conditions than is the case with any other variety of wheat. It grows satisfactorily on all types of soil, but on the whole, comparatively light sandy soils or soils overlying chalk or oolite seem to suit it best. Its yielding capacity is, however, extremely uncertain and whilst crops of 40 bushels or so to the acre are often grown the variety may, even under conditions which are apparently favourable, produce crops of only 15 bushels per acre. Consequently in districts in which it is not cultivated the first sowing should only be on a small experimental scale. It may be planted at any time from the autumn up to the beginning of May.

Judging from a long series of trials carried out on behalf of the Home Grown Wheat Committee of the British and Irish Millers' Association, February sowings give, as a rule, the best results. Nevertheless, later sowings are often very satisfactory. For instance, one case is reported where a yield of 49 bushels of grain and 50 cwt. of straw per acre was obtained from a sowing made as late as April 19. Such a yield, however, is exceptionally good. The average yield per acre, calculated from sixty-two trials, carried out all over the country, works out at 29.5 bushels.

To secure the maximum crop a thick seeding appears to be essential. Three bushels per acre is the minimum amount usually considered to be advisable, and for late sowing the amount may be increased to $3\frac{1}{2}$ or even 4 bushels. These heavy seedings appreciably check the extent to which the crop is attacked by yellow rust, but at the same time, particularly if the highest rates are used, they result in a very slender straw.

In the Western Midland counties an impure strain of "Red Fife" is often grown under the name of "Cook's Wonder." The history of this strain has been traced and it is known to have been the result of an importation from Canada made some twenty years ago. It is interesting to find that after this length of time, in a climate often assumed to be inimical to the production of the finest quality of grain, the strength of the variety compares very favourably with that of the Canadian wheats.

Stocks of English grown "Red Fife" are not over-abundant. When unobtainable, "No. 1 Northern" or "Manitoba Hard" can safely be substituted for them as the wheat from Canada sold under these names is reasonably pure "Red Fife."

"Burgoyne's Fife" is a variety resulting from a cross between a strain of "Red Fife" and "Rough Chaff" (or "Essex White") wheat. In general appearance the ears are not unlike those of "Red Fife," though, as a rule, they are a little larger. The grain, however, is pale, translucent and amber coloured. In quality it is not the equal of "Red Fife," but it is markedly better than that of any other English wheat. Although extensive trials of the variety have been made in most parts of the country it seems impossible to say definitely what types of soil are best suited for its growth. The general trend of evidence indicates that sowing on cold and wet soils is usually unsatisfactory, and that light, well drained loams give, as a rule, the best yields.

The growing crop is very similar to a strong crop of "Red Fife," though the straw is more sturdy and stands better. As in the case of that variety even an expert valuer almost invariably underrates the yield per acre. The small ears are

deceptive and it is difficult to make a sufficient allowance for the freedom with which the plants tiller. Calculated from 18 plots grown in the years 1914 and 1915 the yield is 30 bushels per acre.

"Marquis" (Fig. 3), a recent importation from Canada, has been widely recommended for spring planting during the past year. This wheat is one of the progeny of a cross between "Red Fife" and an Indian variety. From the former it has inherited



FIG. 3.—"Marquis." The ear to the left is a "rogue."

its excellent milling and baking characteristics, and from the latter a very early ripening habit.

The ears and the general habit of the plants are very similar to those of "Red Fife" (Fig. 2). None of the crops I have seen so far are true to type. All of them have contained an appreciable percentage of strongly bearded ears, similar except for the awns to "Marquis" wheat, and also a smaller quantity of plants with denser ears.

The data with regard to the cropping capacity of this variety under our English conditions are very scanty. From estimates made in the field it appears to be about the same or possibly a little less than that of "Red Fife." The variety is suitable for late planting, but heavy crops cannot be expected from sowings made later than the end of March.

"Red Marvel" is a variety imported from France, where it is known as "Japhet." Some years ago it was grown on a fairly large scale in the Eastern Counties, mainly as an autumn



FIG. 4.—"Red Marvel"

wheat, but its cultivation appears to be steadily decreasing. As a spring wheat it has considerable merits, particularly if sown before the middle of March. Later sowing is possible, but it is usually accompanied by a marked falling away of the yield per acre. The earlier sowings generally ripen at about the same time as the ordinary autumn-sown crops.

The characteristics of the ears are shown in Fig. 4. The chaff is a dull white colour, the grain red and low in quality. The straw bends over as the crop matures, and owing to the

susceptibility of the plants to yellow rust, it is frequently discoloured and soft. Nevertheless, it usually stands satisfactorily except on rich soils. The yielding capacity, particularly if sown early, is on the average distinctly better than that of most spring wheats. The mean value for some thirty crops sown before March 1, 1913 and 1914, is 32 bushels per acre. This figure is practically identical with the average yield of wheat, mainly, of course, autumn sown, for the whole country. Unfortunately there is no means of comparing it with any real accuracy with the average yield for autumn-sown wheats grown in the same neighbourhoods, but the results of a few enquiries indicate that this would be about 40 bushels per acre. "Dreadnought" and "Sensation," both of which are also French varieties, are not particularly suitable for spring sowing. If planted in March they frequently fail to mature satisfactorily.

"April," or "April Bearded" wheat, is one of the most reliable varieties known for late sowing. As a rule it can be planted with perfect safety up to the middle of April, and still later sowings are often risked without untoward results.

The ears are slender, lax, and bearded, red or sometimes reddish grey in colour (Fig. 5); the grain is red, mealy, or often translucent, and apparently slightly better in quality than that of most of the English wheats. The straw is somewhat slender and rye-like, and the plants do not tiller freely.

As is usually the case, autumn-sown plants are more vigorous than spring-sown. The differences are shown in the following table:—

	Autumn-sown	Spring-sown
Length of straw	120 cm.	110 cm.
Length of ear	13 "	10 "
Number of spikelets per ear	16 "	12 "
Grains per ear	55 "	45 "

In purchasing seed of this variety it is advisable to describe it as "April Bearded." Several cases have occurred where seed merchants have supplied "Red Marvel" in its place, possibly under the impression that this was a spring wheat which could be sown in April, and was probably the kind required. "Red Marvel" is not suitable for very late planting, and in each of the cases which have come under my notice where it has been substituted for April wheat, a crop failure has been the result.

"Nursery" wheat is also an old English variety which was formerly grown on a very extensive scale, though mainly as an autumn wheat. It is, however, suitable for spring sowing, and can generally be counted upon to mature satisfactorily if sown before the middle of April. Later planting is not advisable.

The ears are broad, fairly dense, and well set with a whitish, beardless chaff. The grain is red and better in quality than that of most English wheats. The difference, however, is not sufficiently great to warrant the millers in paying more than a few pence per quarter extra on this account. The yield per acre calculated from eight crops sown between Feb. 18 and March 30 is 29 bushels per acre.



FIG. 5.—"April" or "April Bearded."

The figures already quoted of the yielding capacity of the varieties described are merely the average of all of those available for the purpose. The published sources of information were the reports of various experimental stations in different parts of the country and also of the Home Grown Wheat Committee of the National Association of British and Irish Millers. In addition I have made use of the data kindly sent to me by correspondents, mainly in the eastern and southern

parts of the country, irrespective of whether the yields were estimates or the results of direct measurements. The figures do not represent the results of any of the varieties at their best simply because the dates of sowing were far from uniform and low yields, the result of over-late sowing, have unduly depressed the averages especially of "Nursery" and "Red Fife."

If the whole series are averaged they show that the yield of spring-sown wheats compares more favourably with that of the autumn wheats than most people would have anticipated, for it amounts to 30.5 bushels per acre as compared with 32 bushels for the latter.¹

Undoubtedly the yield would have been better had a more judicious choice of varieties been made. But at present this offers a certain amount of difficulty which can only be overcome by farmers testing several varieties in order to determine which is most suitable for their conditions. This course has been adopted in several cases with the result that in each of those reported to me the choice has fallen on a different variety. Thus one correspondent in Oxfordshire grows "April Bearded" on a large scale and averages 36 bushels per acre, a second, in Somerset, grows "Burgoyne's Fife" with the same average result, and a third, in Surrey, "Red Fife" and reports from 8 to 9 sacks per acre.

It is impracticable to put the varieties in any order of merit until comparative trials of the whole series have been made in a number of districts. Still, it is perhaps worth while to summarise the general impressions gained whilst inspecting crops during the past season and also whilst comparing the varieties, under the same conditions of soil and cultivation, at the Plant Breeding Institute at Cambridge. They are as follows:—Where "Red Fife" or a wheat of this type such as "Burgoyne's Fife" or "Marquis," is known to crop satisfactorily it should be sown in preference to any other kind. Failing these "Nursery" or "Red Marvel" are the best yielding sorts for February sowing, and as a rule the crops will be ready for harvest at the normal period. After the beginning of March "April Bearded" and "Marquis" are the most reliable kinds. There is little to choose between the standing capacity of the straws of these varieties when the whole series are grown under uniform conditions. Possibly that of "Nursery" is the best, whilst that of "Red Marvel," especially on rich soils, is distinctly the worst.

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Cambridge.

¹ It is assumed that the proportion of spring-sown wheats has been too small of late years to affect the average for the whole country.

THE CORN TRADE DURING THE WAR.

It was on the first of August, 1914, the first day of a new Shipping Year, that Germany invaded Belgium and began the greatest of all wars. This circumstance had given us by the end of last July an absolutely clear and distinct record of a year's grain shipments and importations under war conditions.

The cereal or harvest year is counted as from September 1, and in this case we have the month of August, 1914, rather awkwardly placed for estimates and calculations. As a matter of actual occurrence, however, the home and agricultural markets of the month were far more concerned with winding up the affairs of the old, or peace, season, than with facing the new propositions of a war era. At the end of last August, therefore, we had completed returns of crops and their distribution, of prices averaged and of values quoted, which enable us to compare a clear year of war with preceding years of peace. The tables presented at the end of this article will be found absolutely trustworthy when such cereal years as 1912-13 and 1914-15 are compared, while the disturbing element of August, 1914, in returns for 1913-14 is in reality very slight. But for the war the rise in the imperial wheat average of 2s. 8d. on the month would hardly have occurred. Still, this rise inflates the cereal year's wheat average by less than threepence on the quarter. In all but the most precise statistics it may be disregarded.

Of the civil year 1915 some late returns are finally presented. They do not represent a year by which either the grain importer on the one hand or the farmer on the other works, but they are of the nature of latest intelligence and moreover will be found useful by those whose books of reference, such as the *Annual Register* and the high-class almanacs, are compiled on the system of a civil year from January 1. The *Statesman's Year Book*, which is invaluable for certain foreign countries, appears in May with figures to December 31 preceding. The admirably organised Statistical Department of the Board of Agriculture presents to Parliament and the public the figures alike for the cereal and for the civil year.

THE SHIPPING YEAR.

August 1, 1914—July 31, 1915.

The international grain trade divides itself to-day into two great sections, each containing three leading elements. The first section consists of the exporting regions of the Empire,

namely, Canada, India and Australia, the second of the great foreign shippers, the United States, Russia and Argentina. Outside these six great producers, the Great Powers of the corn trade as they have been called, we have a dozen occasional contributories, six within the Empire and six outside. The six under the flag are New Zealand, South Africa, Rhodesia, the East African Protectorate, and Egypt with Cyprus. Burma, a good shipper, is included in the Indian statistics. Apart from Burma the six are not of much trade importance. The six foreign occasional contributories are Roumania, Bulgaria, Chili, the Turkish Empire, the Central European Powers and Persia. Of these the first three are alone important but Roumania and Bulgaria in peace time are undeniably disturbing elements, and Chili in a good year can appreciably influence the markets for barley and oats.

The shipping year 1914-15 has seen in the wheat receipts a wonderfully small amount of disturbance when considered as a whole. The figures presented in Table I. reveal a net difference of 380,000 quarters out of twenty-seven millions, roughly speaking about one and a half per cent. and not a total capable of influencing prices by anything quotable. The falling-off induced by the war is seen moreover to have been entirely in the imports from the armed countries. Of these we have no specific details but we may safely assign the diminution mainly to Roumania, Bulgaria and Hungary. The loss of Hungarian flour was expected to upset the confectionery trade, but we are glad to say that the London millers rose to the occasion and produced by Hungarian process, which is no patent, a type of flour meeting all reasonable requirements. Even those who do not belong to the Anti-German Union, may express a hope that this gain to the employment of skilled home labour once achieved will not be given up.

The Russian wheat shipments were at once stopped, so far as the Baltic went, by the predominant strength of the German Fleet, but Turkey did not join the enemy quite at once and 168,611 quarters of wheat got through to us from the Black Sea. There were no further supplies from Russia till September, 1915, when 45,000 quarters reached us from the White Sea. Australia had so small a crop in January, 1915, that shipments were forbidden by the Commonwealth Government. The 463,579 quarters of Australian wheat received consisted of the crop reaped in January, 1914. The absence of this mild wheat of fine colour has been felt by millers, who accordingly rejoice at the liberal shipments which the good new crop are rendering feasible. India had a good crop in April, 1915, but shipments were not very rapid at first, and the large increase in Indian wheat supplies will be a feature of the

current year's figures which of course will not be available before August. Canada made a good effort to send us wheat, but had rather under an average crop. Our imports of wheat show a greatly increased dependence on America and the serious effect of this will be seen when we come to the subject of prices. These heavy purchases from America have also had a very bad effect on gold exchange and helped to increase to us the cost of other American commodities. Argentine sent us a serviceable extra million quarters. When the war broke out the Argentine firms were forced to repudiate a number of contracts as the small growers up-country refused to deliver the grain on which the firms had already paid earnest money. The impossibility of prosecuting many thousands of ignorant peasants was obvious and one notes with pleasure that the enlightened merchants of Argentina managed eventually to let us have the promised grain, our buyers waiving the "time an essence of the contract" clause, and the Argentinos either procuring the corn of other sellers or showing a judicious blindness when the recalcitrants came in, as after a few weeks they did. This was the only touch of panic induced by the war and it soon passed. We can easily pardon the mental unsettlement of these small and remote agriculturists when we recollect the stories in our own Press of old ladies occupying a bed-sitting room and "laying in" a whole sack of sugar.

In Table II. the imports of spring corn are submitted. They show that a grave scarcity of feeding barley due to the imprisonment of the Russian surplus was fully made up by largely increased importations of Indian corn. The importations of oats showed little change in total, and the oats of North and South America which replaced the Russian supply showed about the same quality, or the want of it, which is apt to mark the consignments from the Black Sea and the Baltic. The falling off in feeding barley amounted to over 1,900,000 quarters, the increased receipts of maize exceeded two millions. A very interesting study and one that the readers of this Journal would, I am sure, peruse with great instruction, would be an article dealing with what may be called the metabolism of feeding. What effect did the maize have on the animals and birds which usually got barley? Some farmers, for instance, hold that to replace barley meal by maize meal leads in pigs to a condition favouring the development of swine fever. Poultry breeders often state that maize spoils a table fowl. The writer is not himself an expert in these matters, his task is fulfilled in chronicling the fact of maize, and especially the yellow type of it grown in Argentina, stepping into the breach left by feeding barley and on the whole tiding us over, as it would seem, uncommonly well.

Coming to the shipments we find there was a falling off on the year of over thirteen million quarters. This is a startling fact, especially as we have just seen that the United Kingdom has obtained all the bread stuffs needed and has at most to assign an insignificant $1\frac{1}{2}$ per cent. disturbance to the war. The causes of this great shrinkage in the international wheat trade are three. The Enemy Powers have had to go upon very short commons. They have been unable to buy the ten million quarters of wheat which they import annually in times of peace. They have not, it is believed, "clemmed" or eaten less, but have eaten potatoes and other less sustaining foods than wheat. They have also slaughtered an enormous proportion of their live stock. Both in stamina of individuals and in resources as nations the Enemy Powers must be badly hit. The second cause of less trade is the great rise in freight which has dictated a policy of home thrift generally. It has put about threehalfpence on to the quartern loaf in all importing countries and is itself due to the enemy shipping being swept off the ocean, and to the enormous transport demands of the Allies. The third cause of less commerce is the Australian drought already mentioned, the flotillas of corn laden vessels usually on the sea from January to April, making their way from Australia to Britain, were this year conspicuous by their withdrawal. Most of them were either taken up by the Government or got across to pick up the cargoes Argentina was wishing to ship, mainly however of maize not wheat.

The reader comparing Table III. of bread-stuffs shipments with the first Table of our own imports will see that the other buyers, our allies France and Italy, the neutrals Holland, Scandinavia, Spain, &c., have secured very good quantities of wheat from Canada, the United States and Argentina. They have left Indian wheat to us for the most part. In proportion to total shipments they have given the preference to Argentine wheat.

Barley shipments (Table IV.) present the most extraordinary figures in the annals of the corn trade. This is a statement which would seem to require consideration before it was expressed, but other great changes as that of the United Kingdom, Egypt, South Africa passing from the list of wheat exporters to that of importers, have been gradual; gradual too has been the growth of the maize trade to its present colossal proportions. The nearest approach to these barley figures in the matter of a sudden surprise is perhaps to be found in the wonderful outrush of soy beans from Japan, Corea, and Manchuria after our go-ahead allies had won their war with Russia. Of a cereal or pulse crop previously known to most of

us merely as yielding an old-fashioned sauce, two million quarters were shipped in a single year.

But the barley shipments show a *drop* of 25,150,000 quarters in a year! The explanation is simplicity itself. Britain and Russia had happily become excellent friends some years before the war, yet the time is not so utterly remote when their good relations were less assured, and it is astonishing how our users of feeding barley allowed themselves to become utterly dependent on a single producer outside the Empire. There is some proportion of the falling off due to short crops in Roumania, India and Tunis in 1914, but these only cover about three millions out of the whole. The barley buyers have been hit to the extent of 22,150,000 quarters by the blockade of a single export power.

What has Russia done with the barley? This is a mystery indeed. Has it gone to replace the 1914 rye crop, which was rather short? Some of it probably has been so applied, but the deficiency in rye was at most five millions. Have seventeen millions been stored? With a large new crop, twenty-five millions above home needs, reaped in August, 1915, there would be a great congestion of storage such as we hear no rumours about. The least improbable surmise would appear to the writer to be that Russia has enormously increased her tale of pigs and poultry. The breeding of these spread over her vast areas admits of a prodigious extension. Some proportion of the barley may have been used for human food thereby increasing the stores of wheat, and some may have been fed to horses thereby increasing the stores of oats. But it may safely be said that no agricultural inquiry of the future is likely to exceed in interest the tracing of the Russian barley surplus of 1914.

The shipments of oats table indicates a striking increase in the shipping efforts of the United States more than making up for the enforced abstention of Russia. What made the shipping year deficient in oats was not the war but the poor crop in Argentina. Had the South American ports sent off in 1914-15 what they did in 1912-13, the scarcity in this cereal would not have occurred. There is, however, a very important matter which we shall have to consider when dealing with crops. The inability of oversea producers to grow quality oats is astonishing, and British horses need better weight and substance in the oats fed to them than imported oats can supply.

Table VI., which deals with shipments of Indian corn, shows how the large crops of La Plata have helped us over a crisis. The direct seaway from the Plate to the Lizard has been a great boon and the enemy cruisers sunk very few ships. After a certain incident off the Falklands they have sunk none.

The deep sea harbours no submarines, and therefore our direct ocean trade with La Plata involves the very lowest war insurance. The grave drawback is that Argentina and Brazil buy so little British "stuff." Vessels have to go out in ballast and thus the buyer of grain has to pay for two voyages. It should pay to ship to South America articles that were not sold, but on chance of sale. They could go out so cheaply that the merchant would stand to make big profits, and yet as *any* freight would be to the good the exportation would be a patriotic act, relieving the strain on the home consumer of Argentine produce. America for three years past has played a small part only in the maize trade but the present shipping year will present different figures at its close, if the great harvest of 1915 is to be sold.

The position of the corn trade on August 1, 1914, was thus formally described by the President of the Liverpool Corn Trade Association :—

"The outbreak of hostilities at the beginning of August last seriously dislocated the whole trade of the country. The difficulties in the corn trade arose mainly from the chaotic condition of financial arrangements, and the threat on the part of shippers and shipowners to cancel contracts and freights. Continuous negotiations with the Government resulted in the inauguration of a National War Risk Insurance Scheme, and the adoption of important financial measures which enabled shipments to be continued, and, thanks to the tact and forbearance shown by both shippers and receivers in appreciating the difficulties of each other, the position gradually improved."

On this official utterance, Mr. J. H. Hubback, in the *Nineteenth Century* magazine, makes this comment: "The financial position of traders in every part of the world was temporarily paralysed, and this state of things has been attributed by some authorities to the short-sighted policy of the Joint Stock Banks. They are credited with the desire so to protect their share-holders' interests that they did not recognise any other duties whatever. Shipments of grain, meat, and other necessities were prevented for quite an appreciable period because there was no means of getting cash to pay for these articles at the port of clearance. It is said that even the great Argentine meat exporters found themselves suddenly deprived of the power of paying for the cattle brought in for slaughter, and it was not for some time that American grain shippers were able to come to an arrangement whereby they had the benefit of considerable funds in hand at New York."

Doubtless there was difficulty and stringency and the American sellers made things very awkward for British buyers

by a general insistence on payment in gold, which had to get out to New York before the corn sailed. Refusal to take even gilt-edged securities was largely motivated by the direct enmity of the German element in America which is rich and has shares in many financial enterprises. This influence did its best not only to shake British credit but also to stop our getting the needed grain.

That these efforts were soon defeated will be seen now that we come to consider the prices which Great Britain had actually to pay for imported produce, nor does the writer doubt that the selfishness of the British banks was a wise selfishness. A crisis in Lombard Street would have injured the nation out of all proportion to the advantages accruing to the import trade.

In Table VII. we give the prices of ten leading imports for the shipping year. These are best Canadian wheat, fair average quality Argentine wheat, American red winter wheat, the cheapest foreign feeding barley for the month, the cheapest light or 304 lb. foreign oats for the month, the cheapest maize (of course purely a foreign product) for the month, the cheapest sound linseed for the month, the average price of feeding rice cleaned, that of fine American flour and that of sound feeding sugar.

It will be seen that the war fell like a thunderbolt on only one of these ten sources of food supply.

Sugar is not our chief concern in this article, but even as a cottage on fire attracts notice before a mansion not in danger, so the one staple in which there has been a really great trade disaster due to the war naturally takes the eye first. Wheat, the vital product par excellence, rose with the war 5s. per quarter for Canadian, but only a penny per cental for American, the new crop in the United States being a large one and the farmers wisely selling forward early and freely. When the new Canadian crop also got into motion, prices became even easier and in October we could buy fine Canadian at 47s. 9d. per quarter, American at 8s. 8d. per cental. Happy were those who did so. One of them, as we know, is named Spiller, another Baker, but the amazing dividend paid by Messrs. Spiller and Baker as the result of their prescience in buying wheat freely at the right moment will only be grudged them by the ill-informed. Twenty like firms buying as freely would have gone far to protect us against the great American Corner which, with our Canadian friends up behind it, as one must, however regretfully, note, commenced operations in January and had by May driven up wheat prices to 71s. per quarter for best Canadian, to 14s. per cental for ordinary American, and made even the new and large Argentine crop

worth 67s. per quarter. The success of this Corner, which made 10s. to 20s. per quarter on six to eight millions of wheat, possibly five millions sterling profit all told, was only connected with the war in that it was the shutting-in of Russia's exportable surplus which invested the crops of the southern hemisphere with such enormous importance. What happened was this. Australian production is at the mercy of six weeks' drought. When that arrives the vast wheat area barely feeds the meagre population of a continent which the white labour policy keeps at less than two people to the square mile. In the autumn of 1914 it did arrive, and Australia's usual exportable surplus of nine million quarters was simply cut out of the picture. Then American speculation began to move. Argentina meanwhile began to harvest a large crop, but on that harvest succeeded six weeks' heavy rain, a rare event, and one that delayed exports merely. Still, it did delay them. Argentine wheat culture is a little primitive, and the farmer, speaking Spanish, finds it easy to say "Mañana." To thresh in wet weather what Latin would do it? To send grain to the coast in uncovered trucks in wet weather were wasteful and clearly wrong. A great Estancia owner in Argentina being on a visit to England and asked by the writer what was his country's most pressing need answered at once, "Tarpaulins"! We have seen in Table III. that Argentina eventually got off nine and a half million quarters to our aid, but it came two months later than usual, and in the interim American speculation, now reinforced by Canadian, had carried all before it. As soon as the Brennus of Buenos Aires was able to throw his sword into the scale, as soon as the Argentine flotillas began to cross an ocean held by our fleet, the situation underwent a transformation of dramatic completeness. Wheat fell in two months 13s. per quarter for Canadian, 14s. per quarter for Argentine, and 2s. 3d. per cental for American.

Imported barley has been a difficult trade, but light oats and Indian corn have enabled buyers to tide over. The dependence in this case has been upon an ally, but upon an ally who could not help. The *Mark Lane Express* in its "Review of the Cereal Year" (September 13, 1915), has dealt with this question, and there is no need to repeat what is obtainable in so accessible a quarter. Suffice it to note that the grain trade since 1905, when Russia in effect entered the entente of Britain and France, had taken for granted that whatever happened on the Continent Russia's great and invariable surpluses would always be available. Russian barley was the cheapest of all possible feeding barley. The British grower could not contend with it. In June, 1910, it was obtainable at a halfpenny per lb. Nor did this Society or other leading agricultural bodies see reason to

oppose a tendency to make our native country a repository and producer of fine quality barley. Well, Russia has grown the grain but the enemy has shut it in, and feeding barley now costs not a halfpenny per lb. but a penny farthing. Of this advance the chief portion, from 27s. to 36s., was accomplished in the period under review. Light foreign oats were at first affected rather violently by the outbreak of war and quickly rose from 21s. to 29s. per quarter. There then followed a period of comparatively moderate prices, and it was not till February that a serious advance—to 34s. per quarter—was made. The cause was the failure of Russia to send us feeding barley and the consequent rush to buy a substitute feeding stuff. As the year went on things improved somewhat, and the shipping year closed with light oats obtainable at 27s. per quarter. The chief difficulty in the absence of Russian supplies is in the extreme variability of American, Canadian, and Argentine production. The American and Canadian oats are sold per 320 lb. in London, but this does not represent their natural weight which seldom exceeds 304 lb. and sometimes drops to 280 lb. The seller honourably makes up the difference, but, as our readers know well enough, weight and quality, roughly speaking, go together.

Maize in 1914-15 was a great stand-by. It helped as much as anything by its stability. Thus the war trumpets startled it into no greater advance than from 31s. to 33s. per quarter, and then with good supplies from Argentina it became actually cheaper than before the war. With the cessation of Argentina's large shipments the American speculator saw his opening, and by capturing the exportable surplus of new home crop forced prices up to 40s. by May. With that effort, however, he had shot his bolt for the time being. June saw the Argentine new crop on its way here in quantity, and the shipping year closed with maize obtainable at 32s. per quarter. As the civil year wore on, the American withholding of maize once more forced prices up and to-day we are chiefly concerned as to what Argentina may be able to ship us of her new harvest.

Linseed, in an article where space is important, must be dealt with very briefly. The shipping year opened and closed on the same price, 54s. per 416 lb. The rise in prices September 1—December 31 was not, however, unforeseen. The two great oversea producers are India and La Plata, but seed linseed comes from Russia and Holland, and home farms which also can produce a fine sowing type would under the circumstances fulfil a patriotic service in doing so.

The shipping year advanced the value of cleaned feeding rice from 9s. to 12s. or 25 per cent. It is not an excessive appreciation. We would respectfully counsel a fuller use of

rice in feeding rations, the more especially as we help our own Empire in such case. The binding quality of rice fits it for use in mixtures with fattening but laxative food.

THE CEREAL YEAR.

September 1, 1914—August 31, 1915.

While our main concern with a cereal year is with grain production the survey of prices during the shipping year may be conveniently continued and completed before we proceed to the study of the actual harvests, a study marking the critical division between production on sowings made before the war and that resulting from war areas of cultivation.

The prices arranged for home produce for the last ten cereal years are officially published, this being one of the many valuable additions made to agricultural convenience by Mr. R. H. Rew, C.B., the chief statistician to the Board of Agriculture. The latest annual table is reproduced as Table VIII. to this article, the other tables being specially compiled. In Table IX. is given a monthly return for the whole period August, 1914, to December, 1915, thus covering the whole period of the three years—shipping, cereal, and civil. The figures for household flour are derived from our own market inquiry, and are London cash terms. Credit and delivery prices can always be obtained on application to the London Millers' Association, but these two elements of credit and delivery are each of them disturbing. Thus in August, 1914, when the Bank rate was very high, credit took on at least 2s. rise, while about two years before the war the strike of transport workers put an even greater premium on to the delivery element. Since the great call for recruits, known as Lord Derby's rally, in October and November, 1915, delivery difficulties have again been acute.

On the cereal year, as a whole, it will be seen that British wheat has risen 17s. 5d., British barley 5s. 8d., and British oats 9s. 7d. The rise in wheat and oats was directly due to the war, but barley prices must be considered separately. The response of the price of the home crop to the war was as nearly as possible 8s. per quarter, roughly speaking 20 per cent. While the price for the first week of August, 1914, was 34s. 2d., for the first week of December it was 42s. 2d., this period covering the whole "first rush" of new crop deliveries. Forty shillings per quarter for wheat and as much per sack for household flour indicate a sixpenny loaf, and 44s. is the coefficient of 6½d. On the opening markets of October, 1915, the price of British wheat was 43s. 5d., and so far as it is possible to distinguish between home and foreign influences a ten shilling rise

exhausts what is attributable to British farmers. The whole rise being 17s. 5d. the remaining 7s. 5d. must be assigned to foreign influence, and, as we have already seen that shipments were sufficient, to foreign speculative withholding. The British farmer got as much as 61s. 9d. early in June, but unfortunately his big cheques were all for the weeks of little supply; the moderate prices were those which he accepted when his deliveries were at their maximum.

The 9s. 7d. rise in British oats is a scarcity advance pure and simple, and is intimately connected with agricultural problems that should repay investigation by soil and climate experts. Two growers of quality oats—Scandinavia and Holland—have preferred to sell to Germany, but the quantities are never large, and if the enemy bids 40s. and upwards we who get the oats cheaper or do without have the more silver bullets as compared with the foe. What, however, is serious and should be weighed by our farmers is the fact that for horses at work at the front with constant calls on their muscular and nervous strength combined, in a word on their stamina, no food whatsoever seems to be a complete substitute for 336 lb. oats. Not merely to grow more oats, but to see that the oats grown reach 336 lb. natural weight is an imperative call. Seeing the labour of sowing and cultivation, of reaping and threshing, we doubt if to sow oats in competition with the almost illimitable production of poor stuff in Canada and Argentina is worth while. These vast countries both boast, if boast be the word, vast areas of land poor in aspect and situation rather than in soil, which are too wet, chill, or windswept for wheat. From them may be won very material quantities of oats so long as there is a market for stuff which is one-third or more husk, and of which the natural weight is from 288 lb. to 304 lb. only. The fact that oats fetched over thirty shillings per 312 lb. from March to September, 1915, was due entirely to a shortish English crop in 1914, to the quotas of Scandinavian and Dutch quality oats going elsewhere, and to the failure of New Zealand to ship. Of New Zealand oat-growing one of course would not like to say Ichabod, but whereas farmers used at Mark Lane to gather round some importer's stand to see and handle oats that challenged all the glories of Gartons and turned the scale at 352 lb. to 368 lb. per quarter, to-day we are expected to admire "Sparrowbills" which just reach 320 lb. In quality as well as in quantity has New Zealand gone down. The area under oats shows a 12 per cent. decline from the beginning of the century. British farmers therefore need fear no New Zealand competition.

The price of British barley rose 4s. 9d. on the war impulse, but fell 2s. on the effect of the autumn Budget of 1914. A

35 per cent. reduction in the sale of beer was forecast by the Government itself as the result of its new taxes on that one particular form of sustaining beverage. How far such taxes were keeping faith with farmers who had sown barley in the spring the writer happily is not called upon to say, but profound discouragement was the inevitable result, and the spring of 1915 saw barley sowings reduced by 18 per cent.

The price of household flour had advanced only 2s. per sack within a month of the war, but the difficulty in securing enough hard wheat rich in dry gluten was increasing from the first, and as a household loaf cannot be made for town consumers without at least 50 per cent. of strong wheat the good deliveries of new English afforded to millers very slight and partial relief. Thus by December value was up to 39s. 6d. and bread rose to 7d. The corner in American and Canadian wheat, which with both Argentine and Indian in the most meagre supply, became indispensable to the town miller, drove up household flour by early May to 53s., and therewith bread rose to 9d. The crisis over, the flour fell gradually to 42s. but closed the campaign a net 10s., which is 2½d. on the quartern loaf dearer than the opening price. The parities as they are called, that is to say the due raters between wheat, the raw material, flour, the ground corn or grist and bread, the baked flour or loaf, must be studied separately. They form a subject of very material consequence to the economist, but they lie outside the scope of this review.

The breadstuffs supplies for the harvest years 1912, 1913, and 1914 present an almost insoluble problem. But for the war the figures which are here presented in Table X. might have occupied an afternoon at the Farmers' Club or even have perturbed the Olympian atmosphere of the Royal Statistical Society. To-day we must concentrate our attention on the very welcome fact that 1914-15 "squeezed through." Supply kept ahead of demand, yet the latter came dangerously near to making its bump, and meanwhile the row-over of 1912-13 remains unexplained. What is of real value to note is that it was the good production of British wheat in August, 1914, which saved the situation. Imports might have been expected to fall off more seriously than by 800,000 quarters. Still, they did fall off by that measure. The trench was left unguarded; and who stepped into and occupied it? The British farmer. The figures are really striking. The value to the country of a minimum of British produce in stock can scarcely be over-estimated, and the higher point to which that maximum is raised the greater will be the security of our national position.

Imports of feeding stuffs for the harvest year were, as already seen in relation to the shipping year, very disappointing

of barley and oats but fully adequate of maize. The figures occupy Table XI. to which it is possible to subjoin a supplementary table of seven allied staples. It will be seen that beans, oatmeal, and ricemeal came in from abroad in larger quantities, to meet alike the emergency and in response to higher bids. On the other hand, the oversea producers of peas, potatoes, and hops were quite unable to respond to the call. The foreign producers of potatoes being largely German the falling off in this item need not be dwelt upon. Of hops we needed less than usual, not only because the home crop was a good one but because the use of a hop-infusion was suddenly made the subject of a severe extra tax. It is only the case of peas which need detain us. English growers should certainly take heart from these statistics. If the oversea producers of peas cannot rise to the occasion of twelve shillings per cental freely paid for Indian white and so forth, the home grower should see before him a long series of profitable markets when peace returns and the buyer is reassured. Ten shillings per cental will pay very comfortably for home production of pulse.

Stocks of breadstuffs on September 1 represent the year's pass book at annual audit. The returns which we are able to give in Table XII. are reassuring. On what margin we should trade is a moot point of course, but long before the war we had got into regarding 2,000,000 quarters as sufficient. We entered on war with 2,100,000 quarters in hand, and after a year of conflict came out of it with 2,090,000 quarters. So much for German submarines.

Stocks of wheat in the United States present a remarkable war change. It is not yet time to estimate the figures which we are able to offer in Table XIII. at their abiding value. In the hour the writer, *periculo suo*, would venture the suggestion that the American farmer is getting a little shy of that selling forward of crops which places the rest of the harvest year at the mercy of the speculative operator. The figures for September 1, 1913, and September 1, 1915, mean that the scope of the latter is cut down from seventy points to seven-teen. He was bidding on the later date 6s. 4d. per quarter more than he was on the earlier, but the American grower was not nearly so eager to sell as he had been at the town price. So long as six million farmers control the American wheat trade we shall not fear any excessive inflation of prices; it is the half dozen of millionaire speculators who produce that result.

We now have an open road—it is not wholly the writer's fault if it has required some clearing—to the really controlling facts of actual wheat production which, war or no war, must eventually decide all issues of human food supply. In Table XIV. we have the wheat production of the ten principal areas.

The United Kingdom has done well as a wheat producer since the war, but with leeway to make up to the extent of 24,500,000 quarters Lord Milner's Committee in its final report (October 27, 1915) did well to insist on the patriotic call to place under wheat all poor pasture and other spare land which by the aid of artificials may reasonably be expected to produce the chief food of man. The United States has increased its wheat area since the war, and the 1915 being slightly above the average per acre the substantial surplus of 44,000,000 quarters is disclosed. France has been sadly hit by the war; every one of the departments which on September 1 was in the hands of the enemy was a wheat-producing department. As the season was none too propitious in the uninvaded west the country is left between these two troubles with a wheat deficiency which is probably little short of 13,000,000 quarters. Lower estimates were current in the autumn, but the position is not one where optimism is an asset. It is far better to recognise the desirability of providing fully for possible import needs. Italy has failed of the last decade to maintain her cereal agriculture. When war was actually declared against the hated Tedeschi all Italy was aflame, but in the previous fifteen or twenty years the flower of the Italian peasantry had been emigrating to escape the hated blood tax. Italian wheat culture, for sheer want of hands, has ebbed by inches until despite a very fair yield per acre this year the country needs imports of 5,000,000 quarters; this to a country of most enviable climate and not over-populated is an admission of agricultural failure on which in an allied and friendly people one prefers not to dwell. The stern fact is better faced that 5,000,000 quarters of oversea production have got to be found.

The Iberian Peninsula need not be dwelt upon. The region is nearly self-supporting. It ought to be an export Power. Russia has a handsome surplus, and with separate small-ownership under the masterly measure of the great Stolypine the area under wheat is growing simultaneously with the increased yield per acre, itself the result of security of tenure resulting in the employment of manures. Roumania's surplus, or rather the disposition of it, depends too much on political considerations to be discussable, adequately, here. The total is not large. Canada has responded to the call of the Empire with a clarion note of its own, and a record area was placed under wheat cultivation in response to the word from St. James's Square that the home country wanted wheat. India made little increase in wheat area, but a good season enabled the growers to put a surplus of some eight millions on sale. The Government at once took the entire offerings.

A ten years' comparison will enable us to measure the existing tendencies of wheat production. The United Kingdom in this period has moved on by 20 per cent. Table XV. will exemplify this and later figures under this heading. The rise is encouraging, and if Lord Milner's Committee's recommendations be duly supported by farmers the rate of improvement will be accelerated. The United States has increased its wheat production by more than 30 per cent., and a part of this gratifying rise is due to an increased yield per acre. The use of fertilisers in the United States is at last extending. The record of French wheat growing is not encouraging, as even before the war there had been some decline. But the situation of France is so utterly peculiar to-day that discussion would be altogether premature. The Iberian Peninsula is unprogressive. Russia, on the contrary, is the most hopeful of the nations, and a treatise might be devoted to the rejuvenation of her agriculture. *Fortior illo*. Roumania cannot be claimed with much authority as a progressive region, but particulars are few and obscure. One must take little for granted on the information reaching us from this country. Canada is making great efforts to increase its regular area under wheat, and apart from the war impetus the splendid work of its unrivalled Board of Agriculture is making for development on the soundest of all lines, that of supplying to farmers the right sort of seed corn, alike for the climate in which they have to grow the grain and the market in which they have to sell it. Mr. Saunders the First (for the "Cerealists" in Canada are a dynasty and a great one) by creating *Marquis*¹ added 20,000,000 acres to the country's possible wheat area, Mr. Saunders the Second by creating *Prelude* has added thirty. The development of rapidly maturing wheat without loss of plant energy is closely analogous to the Smithfield Club policy over early maturity in live stock for the butcher. In Canada the agricultural march northward is checked not by soil, which is good, or by conditions which, with due precautions, man can support. It is checked by the shortening period in which crops, and particularly wheat, will and can ripen. Thus it is that the good House of Saunders, ever evolving wheat that can do its devoir in fewer days, is winning the areas of whole counties year by year to the cultivable area of the globe. Indian progress is less remarkable. Irrigation has proved a great success. Not only have the yields doubled, so that the rent-charge on the irrigation outlay leaves a handsome margin, but that the relief for the vicissitudes of the season has added to the happiness of hundreds of thousands, and the competition

¹ See page 44 (Ed.)

for the irrigation holdings has been so great that Government has had to accord rights of pre-emption to ancient occupants of land in the newly irrigated regions. With these registered and encouraging successes one might have expected a greater increase in wheat production than of 1,500,000 quarters in five years.

In Table XVI. we deal with the production of feeding stuffs, in the same countries which are covered by our wheat statistics. Here the information is not nearly so abundant. We cannot get safer figures than for the ten years of which 1914 was the last, and as in the case of wheat we must exclude the southern hemisphere which is so little regardful of our exigencies in Bedford Square as to reap its harvests after we have gone to print. The main facts disclosed are that Russia dominates the trade in ordinary imported barley in an average peace year, and that America is the leading power in the maize trade. The figures given in this table indeed sufficiently explain why Americans call maize simply "corn." As well might we object to English business men speaking of "The City." Barley statistics show Russia's easy primacy in ordinary times, but it must be remembered that, progressive as we have seen Russian agriculture to be, it has not yet reached the stage of growing malting barley. Of this type Chili raises perhaps half a million cwt. and the Pacific States of America three millions, available for exportation. Central Europe in peace times may spare a million cwt. The question of heavy oats has already been discussed. The world's production of rye is currently reckoned at 200,000,000 quarters, but as sales in this country do not exceed 200,000 the crop is not a subject that need detain us here. None the less the statistician who finds leisure and has interest to investigate the question of rye production may be assured of the exhilaration which invests the opening up of virgin soil. The yield of rye undoubtedly fluctuates by 25 per cent. from year to year. This is 50,000,000 quarters on the world production, and the effect of the rye surplus in one year and of the rye deficiency in another is bound to register itself in important control of the other cereal markets, both wheat and feeding stuffs. Herschel discovered a great planet on far less degree of influence shown to be exerted on the others than this proved variation in the orbit of rye. The yield for the cereal year 1914-15 was in the case of this cereal a good deal better than for the previous season. Thus much is to the good of the general cereal position to-day. Owing to the small home production and the number of rye-eating foreign refugees in England, the few farmers who grew rye in 1915 have done uncommonly well by it, and have placed their small crop,

about 100,000 quarters, at the quite handsome price of 45s. per quarter.

THE CIVIL YEAR.

January 1, 1915—December 31, 1915.

Professor Wrightson, in the illuminating article which he recently contributed to the "Contemporary Review," claimed that before the war there was a small but perfectly perceptible and steady movement towards higher prices for all the cereals. He illustrated his argument by a division of years into lustrums, a quinquennial system familiar to the Romans but unusual with us. The figures, however, seem to show a distinct movement.

	Wheat.	Barley.	Oats.
1900—04	27·6	24·4	17·5
1905—09	31·6	25·3	18·1
1910—14	32·11	27·1	19·6

To these averages with the completion of the civil year we can now add

1915	32·11	37·5	30·4
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Thus, the wheat advance on the four years just before the war is exactly a sovereign on the quarter or 2½*d.* on the quarter bushel. The price of the latter was 5½*d.* for the five years period, and it should for 1915 have been eightpence. It averaged *d.* more, but this was the result of, in the first place, increased cost of distribution (transport), and in the second of manufacture (the rise in bakers' wages since the war averages 7*s.* per week). The rise in British barley, 10*s.* 4*d.* per quarter, is largely due to the decreased production of malting grade, while the reduced imports of the feeding type have also played their part. The British oats tendered since August, 1914, have been in constant demand. The 10*s.* 10*d.* rise represents a legitimate profit which should encourage not only increased sowings but a determined effort to improve the yield per acre. Few plants respond more generously to manurial help over a difficult spring or show so steady an increase in yield on the employment of the right seed kinds. The excellent weight of fine oats makes them immediately saleable and one has already seen how the Government and other high-class buyers are keen to acquire the heavier samples. Beans, peas and rye are not averaged by any Government returns, but the heavier beans have seldom of late been parted with under 50*s.*, or good rye under 45*s.* per quarter. Peas have made good prices, and 1915 came in with 60*s.* readily obtainable for any samples in good condition and of the right weight.

There being no averages for imported corn the following prices at the first January market in London for five years must be submitted as a substitute. As Liverpool is the chief centre of the American wheat import trade the price per cental at that port is also given.

	January 1-8				
	1912	1913	1914	1915	1916
Wheat, Best Canadian (496 lb.) . .	41/9	38/-	35/6	54/-	67/-
" F.A.Q. Argentine (496 lb.) .	38/3	38/-	37/-	52/3	64/-
" American Red (100 lb.) . .	7/5	7/5	7/-	10/6	12/9
Barley, F.A.Q. Feeding (400 lb.) . .	26/-	25/3	20/6	30/-	41/-
Oats, Common Foreign (304 lb.) . .	18/9	19/-	16/9	29/-	33/-
Maize, Common Foreign (480 lb.) . .	30/6	25/-	24/6	29/-	47/-
Sugar, Fair Commercial (112 lb.) . .	18/-	9/6	9/-	15/-	31/-
Linseed, F.A.Q. Foreign (416 lb.) . .	70/-	44/-	44/-	46/-	75/-
Cottonseed, Egyptian (2,240 lb.) . .	163/-	170/-	177/6	140/-	285/-
Rice, Burmese Feeding (112 lb.) . .	9/-	9/10	7/9	12/-	15/6
Rice Bran, Burmese Feeding (2,240 lb.)	100/-	100/-	95/-	120/-	180/-

The prices are in shillings and the units those in ordinary use. Their great divergency is regretted by no one more than the writer, but he hesitates to convert them into any uniform denomination because the readers of this *Journal* wish to buy at the *lowest wholesale price*, in other words, by the units above given. Thus, to take the last figure in the above list, 180s. was the January, 1916, price of rice bran and would buy the same at Mark Lane. But although a cwt. is $\frac{1}{16}$ of a ton and 18s. is $\frac{1}{16}$ of 187l., it was not possible to obtain a cwt. of rice bran for 18s.

The perusal of the eleven items in the above list of imports and their price will at least, we hope, convince the reader of one thing and that is the vital consequences now-a-days of following the markets. The daily study of agricultural events should pay a dividend perhaps more surely than anything else on the farm, the careful study of the weekly agricultural press has become a necessity if a dividend is to be paid at all. The fluctuations above given will at once show that prices bear no stable relation to the feeding or fattening value of the grain or food quoted. The clever chemist with his "proper rations" must never be neglected. Rice, for instance, was cheap in 1912, maize comparatively dear. The chemist would point out that oats were cheap and would largely replace maize as a fatterer, leaving rice to be used as a sustainer. Amid the general war fearness he would yet be able to indicate on which articles the

advance was most or least justified by their intrinsic feeding and fattening value. In imported wheat the different prices ruling are equally capable of analysis and the quotations by no means uniformly follow intrinsic milling value.¹

It were scarcely too much to affirm that the country gentleman, the farmer, nay the very corn chandler and distributor, who would devote a clear hour to Tables XVII. and XVIII. with which this review is concluded would rise from that perusal appreciably richer in future power to judge of what to purchase from overseas and what to grow for sale at home. North America has fully resumed that control of the wheat market which it lost in 1910 and 1911, and North American control means speculation prevailing over steady trading. Argentine and India are steady sources of wheat supply, but they are not more than that.

The shipments of feeding stuffs show some striking developments. South America, a non-speculative, bona fide agricultural producer, has wrested the control of the maize trade from the United States, thereby doing not a little for British feeding interests and making Indian corn one of the most settled in price of all the agricultural produce imported. With respect to barley, Argentina is developing as a producer with extreme slowness, and seeing that the cessation of war will release the Russian surpluses Argentine cultivators will do well to "go slow." A material increase in North American barley exports is to be noted, but is mainly due to Californian and other Pacific States which ship malting quality. Latterly, however, Canada has shipped freely of a robust feeding barley at 43s., and the United States of an inferior 372 lb. kind at 38s. to 40s. Oats as an article for export represented in 1912, 1913 and 1914, a ding-dong rivalry between North and South America, but since the close of 1914 the enormous rise in freight has given the region which is so much the nearer to us an overwhelming advantage. North America has, for the time being at all events, assumed an easy mastery of the trade in the commoner sorts of oats.

With regard to State intervention it is obviously too soon to set forth the details of Government action on the wheat supply since the war, though it has been officially announced that such action has been taken, in May, 1915, in July, 1915, and again in January, 1916, when a Wheat Committee under Sir E. G. Saltmarsh was appointed expressly to deal with the grave questions of imports and freights. When the time comes for a detailed statement a chapter of no little interest is likely to be added to the history of the British Corn Trade.

¹ See the articles entitled "Notes on Feeding Stuffs" appearing monthly in the *Journal of the Board of Agriculture*.—Ed.

TABLE I.—*Shipping Year, August 1—July 31.*

United Kingdom Wheat and Flour Imports (480 lb.).

	1914-15	1913-14
EMPIRE:		
Canada	7,424,617	6,830,938
India	3,256,568	3,007,852
Australia	463,579	3,476,881
ABROAD:		
U.S.A.	12,350,795	8,870,977
Russia	168,611	2,246,673
Argentina	2,824,458	1,729,567
VARIOUS	163,953	869,090
TOTAL	26,652,581	27,031,978

TABLE II.—*Shipping Year, August 1—July 31.*

United Kingdom Imports.

	Barley (480 lb.)	Oats (312 lb.)	Maize (480 lb.)
1914-15	4,010,000	5,753,000	11,420,000
1913-14	5,911,000	5,874,000	9,369,000

Principal sources of barley were, in order named, for 1914-15, America, Russia and India; for 1913-14, Russia, America and Canada.

Principal sources of oats were, for 1914-15, America, Argentina and Canada; for 1913-14, Argentina, Russia and Canada. For 1913-14 there were nearly a million quarters registered as German, but the bulk of this supply consisted of Polish oats shipped from Baltic ports under the German flag.

Principal sources of maize were, for 1914-15, Argentina, America and Roumania; for 1913-14, Argentina, Roumania and Russia. In 1914-15, 80 per cent. of maize imports came from Argentina.

TABLE III.—*Wheat and Flour Shipments to Europe (480 lb.).*

	1914-15	1913-14
EMPIRE:		
Canada	12,000,000	14,000,000
India	4,100,000	3,700,000
Australia	80,000	6,100,000
ABROAD:		
U.S.A.	26,000,000	16,000,000
Russia	250,000	21,500,000
Argentina	9,500,000	3,300,000
VARIOUS	400,000	8,100,000
TOTAL	59,330,000	72,700,000

The Corn Trade during the War.

TABLE IV.—*Barley Shipments to Europe (400 lb.).*

	1914-15	1913-14	1912-13
EMPIRE :			
Canada	50,000	40,000	60,000
India	310,000	500,000	1,950,000
Australia	40,000	10,000	5,000
ABROAD :			
U.S.A.	3,100,000	2,100,000	3,100,000
Russia	750,000	24,000,000	17,000,000
Argentina	190,000	90,000	5,000
VARIOUS	150,000	3,000,000	2,150,000
TOTAL	4,590,000	29,740,000	24,270,000

TABLE V.—*Shipments of Oats to Europe (304 lb.).*

	1914-15	1913-14	1912-13
EMPIRE :			
Canada	400,000	480,000	150,000
India	—	—	—
Australia	10,000	5,000	5,000
ABROAD :			
U.S.A.	10,200,000	1,100,000	4,100,000
Russia	10,000	3,900,000	5,600,000
Argentina	3,800,000	2,900,000	6,600,000
VARIOUS	100,000	1,050,000	100,000
TOTAL	14,520,000	9,435,000	16,555,000

TABLE VI.—*Maize Shipments to Europe (480 lb.).*

	1914-15	1913-14	1912-13
EMPIRE :			
Canada	20,000	15,000	10,000
India	—	—	—
Australia	—	—	—
ABROAD :			
U.S.A.	5,100,000	250,000	4,700,000
Russia	139,500	2,050,000	1,700,000
Argentina	25,300,000	17,800,000	24,800,000
VARIOUS	405,000	4,600,000	800,000
TOTAL	30,964,500	24,715,000	32,010,000

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TABLE VII.—*Prices of Imported Produce for the Shipping Year (shillings), August 1, 1914—July 31, 1915.*

First market of month. 1. Best Canadian Wheat, per 480 lb. 2. Argentine Wheat, per 480 lb. 3. American Red Winter Wheat, per 100 lb. 4. Foreign Feeding Barley, per 400 lb. 5. Foreign Light Oats, per 304 lb. 6. Maize, per 480 lb. 7. Linseed, per 416 lb. 8. Feeding Rice, cleaned, per 112 lb. 9. Fine American Flour, per 280 lb. 10. Feeding Sugar, per 112 lb.

	1	2	3	4	5	6	7	8	9	10
1914										
August	45/-	42/-	9/-	27/-	21/-	31/-	54/-	9/-	31/-	10/-
September	50/-	—	9/1	30/-	29/-	33/-	54/-	12/-	39/-	20/-
October	47/9	—	8/8	27/-	27/-	27/-	48/-	12/-	37/-	20/-
November	49/6	—	9/-	29/-	29/-	31/-	45/-	11/9	38/6	18/-
December	50/-	—	9/5	30/-	28/-	29/-	46/-	11/9	38/-	15/-
1915										
January	54/-	52/-	10/4	30/-	29/-	29/-	46/-	12/-	40/-	15/-
February	68/-	68/-	13/6	37/-	34/-	37/-	56/-	12/-	49/-	15/-
March	67/-	67/-	13/8	36/-	32/-	38/-	62/-	11/-	49/-	17/-
April	68/-	65/-	13/2	35/-	31/-	35/-	50/-	12/-	48/-	16/-
May	71/-	67/-	14/-	35/-	31/-	40/-	52/-	11/9	50/-	19/-
June	70/-	68/-	13/6	35/-	29/-	36/-	55/-	11/9	50/-	20/-
July	58/-	53/-	11/9	36/-	27/-	32/-	54/-	12/-	46/-	20/-
Add to complete Harvest Year.										
August	60/-	57/-	11/6	39/-	27/-	32/-	54/-	12/-	45/-	20/-
Add to complete Civil Year.										
September	60/-	56/-	11/4	41/-	26/-	32/-	55/-	13/-	43/-	22/-
October	62/-	56/-	10/3	37/-	27/-	32/-	54/-	14/-	42/-	25/-
November	60/-	58/-	11/2	40/-	32/-	38/-	59/-	14/-	43/-	29/-
December	61/-	59/-	11/8	39/-	31/-	41/-	65/-	14/6	45/-	30/-

TABLE VIII.

(From the *Board of Agriculture Journal*, vol. xxii., No. 6, p. 581.)

Harvest years		Prices per quarter		
Sept. 1—August 31		Wheat	Barley	Oats
		s. d.	s. d.	s. d.
1905—1906	.	28 9	24 2	18 5
1906—1907	.	28 1	24 5	18 4
1907—1908	.	32 9	25 8	18 2
1908—1909	.	36 6	26 11	18 10
1909—1910	.	32 6	23 10	17 8
1910—1911	.	30 11	24 9	17 8
1911—1912	.	34 10	31 2	21 6
1912—1913	.	32 0	27 10	19 7
1913—1914	.	32 4	26 10	19 1
1914—1915	.	49 9	32 6	28 8

TABLE IX.—*British Prices: First Market of each month.*

	Wheat, 480 lb. Average	Barley, 400 lb. Average	Oats, 312 lb. Average	Household flour, 280 lb. No. 1	Bread, 415 house- hold
1914.					
August	34½	25½	19½	32½	5d.
September	36½	30½	23½	34½	5½d.
October	37½	29½	22½	34½	6d.
November	38½	28½	23½	36½	6½d.
December	42½	30½	25½	39½	7d.
1915.					
January	44½	29½	26½	46½	8d.
February	53½	32½	29½	49½	8½d.
March	55½	34½	31½	51½	9d.
April	54½	31½	30½	52½	9½d.
May	58½	32½	31½	53½	9d.
June	61½	35½	32½	47½	8½d.
July	49½	35½	31½	43½	8d.
August	55½	35½	31½	44½	8½d.
September	45½	38½	26½	42½	8d.
October	43½	40½	26½	43½	8d.
November	51½	47½	30½	44½	8d.
December	53½	49½	31½	46½	8½d.

TABLE X.—*Breadstuffs. Supplies for the Harvest Years, September 1—August 31.*

	1914-15	1913-14	1912-13
	Qrs. (480 lb.)	Qrs. (480 lb.)	Qrs. (480 lb.)
British	7,804,000	7,087,100	7,175,300
Imported	26,013,160	26,921,220	30,149,450
Total	33,817,160	34,008,320	37,324,750
Wants	33,600,000	33,200,000	32,800,000
Surplus	217,160	808,320	4,524,750

TABLE XI.—*Feeding Stuffs Imports. Harvest Years, September 1—August 31.*

	1914-15	1913-14	1912-13
	Qrs.	Qrs.	Qrs.
Maize (480 lb.)	11,197,760	9,375,868	11,557,461
Barley (400 lb.)	3,512,152	5,928,661	6,259,878
Oats (304 lb.)	5,654,563	5,665,811	7,373,639

(SUPPLEMENTARY TABLE COMPLETING THE ABOVE.)

September 1, 1914—August 31, 1915. *Harvest Year Imports into United Kingdom. "Minor Staples."*

	1914-15	1913-14
	Cwt.	Cwt.
Beans	1,651,000	1,581,000
Peas	845,000	1,516,000
Potatoes	2,115,000	3,924,000
Oatmeal	836,000	624,000
Maize meal	219,000	340,000
Rice meal, &c.	7,207,900	5,010,000
Hops	183,000	374,000

TABLE XII.

Stocks of Breadstuffs, September 1, United Kingdom.

1915	2,090,000 quarters at 52/-
1914	2,100,000 " 36/2
1913	2,450,000 " 32/7

TABLE XIII.

Stocks of Wheat, September 1, United States.

1915	1,785,000 quarters at 38/10
1914	6,155,000 " 41/-
1913	7,090,000 " 32/6

TABLE XIV.—*Wheat Production. The World's Balance Sheet, September 1, 1915.*

	Production	Wants	Surplus	Deficiency
	Qrs. (480 lb.)	Qrs. (480 lb.)	Qrs. (480 lb.)	Qrs. (480 lb.)
The U.K.	9,500,000	34,000,000	—	24,500,000
The U.S.	124,000,000	80,000,000	44,000,000	—
France	30,000,000	43,000,000	—	13,000,000
Italy	24,000,000	29,000,000	—	5,000,000
Peninsula	18,000,000	19,000,000	—	1,000,000
Russia	111,000,000	70,000,000	41,000,000	—
Roumania	13,000,000	8,000,000	5,000,000	—
Canada	34,000,000	8,000,000	26,000,000	—
India	48,000,000	40,000,000	8,000,000	—

TABLE XV.—*Wheat Production. Millions of Qrs. (480 lb.). Ten Years.*

	1915	1914	1913	1912	1911	1910	1909	1908	1907	1906
The U.K.	9.5	7.8	7.1	6.0	8.0	7.2	7.9	6.8	7.3	7.5
The U.S.	124.0	111.4	95.4	91.0	78.0	79.4	92.0	82.4	79.0	91.0
France	30.0	39.2	40.0	41.9	40.3	31.5	45.0	39.0	47.0	41.0
Italy	24.0	21.0	26.1	20.8	24.0	19.0	23.0	24.0	22.6	20.0
Peninsula	18.0	15.5	15.0	14.5	19.0	18.0	18.0	14.6	14.0	18.0
Russia	111.0	101.0	120.0	91.0	68.0	103.0	98.0	71.0	61.0	63.0
Roumania	13.6	6.0	10.0	11.0	12.5	13.4	6.9	6.7	5.3	13.6
Canada	34.0	20.0	30.0	28.0	27.0	19.0	21.0	14.0	10.5	15.4
India	48.0	40.0	45.0	46.0	46.5	41.0	35.0	27.0	40.0	40.5

TABLE XVI.

World Production of Feeding Stuffs. Millions of Cwts. (112 lb.). Ten Years' Average, 1905—1914 inclusive.

	Barley	Oats	Maize
United Kingdom	29.0	60.0	Nil
U.S.	74.0	300.0	1,378.0
France	20.0	100.0	11.4
Italy	4.0	10.0	50.0
Peninsula	12.0	8.0	14.0
Russia	200.0	286.0	42.0
Roumania	11.0	7.5	51.0
Canada	20.0	94.0	9.0
India*	40.0	Nil	20.0

* India includes Burma, where Maize cultivation is on the increase.

TABLE XVII.—*Wheat Shipments for 1915.*
(Unit 1,000 quarters of 480 lb.)

1915	North America	South America	India
January	3,995	150	115
February	3,289	985	30
March	2,557	2,244	103
April	2,642	2,687	70
May	3,075	2,802	498
June	2,143	1,326	1,039
July	1,439	490	1,171
August	1,110	138	430
September	1,772	162	10
October	4,296	67	—
November	3,881	11	—
December	3,579	28	—
Total 1915	33,578	11,120	4,274
1914	29,757	4,237	3,046
1913	23,675	13,233	6,116
1912	16,638	12,539	7,874
1911	9,675	10,925	5,962
1910	8,253	8,246	5,061

TABLE XVIII.—*Shipments of Feeding Stuff for 1915.*
Unit 1,000 quarters (Maize 480 lb., Barley 400 lb., Oats 312 lb. per quarter).

1915	North America			South America		
	Maize	Barley	Oats	Maize	Barley	Oats
January	561	239	651	2,196	—	594
February	600	238	847	1,197	—	980
March	740	149	772	663	—	617
April	941	231	1,440	503	—	590
May	605	38	1,931	671	15	413
June	269	73	1,771	1,924	40	261
July	260	115	1,319	3,120	25	198
August	38	62	248	2,077	30	19
September	—	215	715	2,476	28	130
October	9	363	960	2,731	61	662
November	42	215	260	1,648	40	138
December	138	501	632	1,024	25	184
Total 1915	4,103	2,339	11,609	20,230	264	4,786
1914	724	2,182	4,863	15,623	135	2,988
1913	5,351	3,143	2,087	22,204	80	6,484
1912	2,396	895	3,768	21,800	25	6,955
1911	6,174	682	892	480	—	4,586
1910	3,619	1,179	519	11,743	—	2,815

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MOTOR PLOUGHS AND MOTOR PLOUGHING.

BEFORE the autumn of 1914 motor ploughs and motor ploughing were almost unknown to English farming practice. It is true that some firms had been making motor tractors for ploughing purposes and had exhibited them at the leading agricultural shows, but trade had been confined to the export business.

Since the outbreak of the war, with the consequent shortage of agricultural labour owing to the enlistment of the agricultural labourers and to the purchase of horses for military purposes, a keen demand for motor power for cultivating purposes has arisen. This demand has been encouraged by the action of the Board of Agriculture in stimulating local centres to hold motor plough demonstrations. Progressive farmers have realized the advantages of such machinery; and at the present time the demand for motor ploughs far exceeds the supply even though several types of American-made machines have been imported and placed on the market.

THE CASE FOR THE INTRODUCTION OF MOTOR PLOUGHS.

The crops generally grown upon arable land may be roughly divided into three classes: corn, fodder and fallow crops. The corn crops, if we except potatoes, produce the greatest value of food per acre; they would be more frequently grown in the rotation but for the fact that during their growth the land tends to become impoverished, foul, and of bad texture. It is a matter of common observation that the period of the year when weeds grow quickest and gain a foothold on the land is the period between the cutting of the corn and the subsequent ploughing of the land in preparation for the next crop. Whilst the crop is growing it is in competition with the weeds for plant food, moisture, and air, and, provided it is a dense one, keeps the weeds in check. As soon, however, as the crop is cut this competition ceases and consequently the weeds have the full benefit of plant food, moisture and air; obviously, the best time to attack the weeds is immediately after the corn is cut so as to kill them when they are at their weakest and when after summer the ground is driest.

It is, moreover, remarkable that the same practice which is effective in keeping the weeds in check, namely, quick cultivation of the stubble after harvest, is equally effective in

maintaining correct texture. In order to obtain good seed-beds, especially on strong soils, the land should be broken up when it is hard and dry, so that when rain falls on the parched soil, the clods crumble, like slacked quicklime, and the furrow slice falls to pieces readily when moved by the harrow. If the ploughing is delayed until the soil becomes wet and sodden, the furrow remains sticky and surly, and unless frosty weather intervenes, the seed-bed remains lumpy and unkindly.

It is, therefore, clear that if land can be broken up by any means immediately after, or better still during harvest, the farmer is advantageously placed as regards his subsequent seedings; but in practice two factors often prevent such ideal cultivation on farms where horses supply the only source of traction power. Firstly, the ground is often baked so dry and hard after harvest that it is impossible to break the surface with horse-drawn implements, when cultivation, if it were possible, would be so valuable; and, secondly, especially upon strong land, it is imperative to get the dung carted out directly after harvest before the ground becomes wet and soft, for if this opportunity is missed only a kind frost will enable carting to be done without damage to the land. Owing to these two reasons, it generally happens that, when reliance is placed solely on horse power, valuable time is lost before the ploughing is done, to the advantage of the weeds and to the detriment of the texture.

In the past much valuable work has been done by the double-engine steam ploughs or cultivators, but except in rare cases, where very large areas are farmed, the capital outlay on these implements is too great to allow farmers to purchase, and the hiring of such tackle from the local engineer has been found in practice far from satisfactory, because it is rarely possible to obtain the machine when required, and because the men working the machine, being the servants of the engineer and not of the farmer, cannot be supervised by the latter to ensure good work.

If, therefore, it can be shown that motor ploughs or tractors can be purchased at a reasonable price without entailing too great a capital outlay per acre; if they are powerful enough to plough and cultivate the soil immediately harvest is over and when the land is baked and hard, so that the weeds can be better kept in check and so that the texture of the soil can be kept in good order without the need of fallowing; if they can also be used for ploughing when the soil becomes wetter; and if they are capable of being put to other uses besides that of ploughing and cultivating; then there is a very wide field for the motor cultivator, because, like all mechanical engines, they require no fuel and no attention when they are idle.

The purpose of this article is to examine the modern motor plough types from an agricultural, rather than an engineering, point of view, with the intention of discussing their good as well as their bad features, and of suggesting types of motors which appear to be suitable to different conditions, and possibly of indicating some directions in which development of this machinery may proceed.

At the outset it is important to notice that motor ploughs are of two distinct types, the Motor Tractor type and the Motor Plough proper. The former consists of two separate parts, one of which is a traction engine hauling behind it by means of a short cable a multiple plough. In the latter the engine and plough are so intimately connected on the same framework that they comprise one machine. The motor tractor type of implement has been used for many years in America and the Colonies, and is now represented in England by some twelve or fourteen different machines,¹ some of which are manufactured at home, others are imported from America. The latter type are of more recent production, and are represented by four machines¹ of home manufacture; they are specially designed for English conditions, being suitable for use in small fields and for ploughing when the ground is more or less wet.

Size.—The size of different motor ploughs varies enormously according to the purposes for which they have been designed. Some of the tractors are very large and unwieldy in appearance; these are generally associated with greater power and therefore greater capacity for work; they may be admirably suited for work on prairie land or for huge fields, forty acres and upwards, but are out of place in small ten-acre fields.

The size of tractor is closely related to the difficulty with which it can be turned; this difficulty is generally more or less masked at motor ploughing demonstrations, since the drivers generally contrive to be making a wide turn when the audience is present, but in practice it makes itself felt in two directions. Firstly, when the turning has to be short, as, for example, in gathering the ploughing about an open furrow, the tractor and plough require "hotching" backward and forward to get into position, and in doing so cut up the ground. Secondly, a very wide headland is required for turning, sometimes as much as 8 yds. to 10 yds.; these wide headlands are not of great significance when fields are large but are inadmissible when fields are small.

Motor ploughs proper are much more easy to handle and to turn by reason of two features in their construction; they are fitted with mechanism by which either driving wheel can be

¹ A list of various motor ploughs and motor tractors, with particulars of each type is given in the *Journal of the Board of Agriculture* for November, 1915.

declutched at will, so that with one wheel stationary they can be run round on the other wheel; and they are generally fitted with reverse gear so that the motor plough can be backed to any desired position. By this means motor ploughs can easily work on a 4-yd. headland, leaving the field neat and tidy in this respect.

Weight and Pressure.—Just as the motor ploughs vary greatly in size so they also vary greatly in weight; the true motor ploughs are light implements varying from 16 cwt. to 30 cwt. Some of the tractors are also comparatively light, but others are very heavy and weigh up to nearly 5 tons. For purposes of road haulage, where the wheels grip upon a smooth yet hard surface, this dead weight is advantageous because it enables the wheels to obtain a better grip of the road, but for traction on the land this property is not important, the grip being obtained by other means. On the other hand, the pressure of heavy tractors is under certain circumstances detrimental to agricultural work, though not always. In dry weather and working on perfectly dry soil, no harm is done by such pressure to any type of soil, but when the land is wet serious damage results especially if the soil is heavy. The soil needs to be sufficiently dry in two respects; the surface soil must not be wet and sticky, nor must the soil below the surface to a depth of 4 in. to 6 in. be sodden. In the former case the soil is churned up and sticks to the wheels, in the latter the soil is crushed and worked to a condition resembling clay ready for brickmaking. Makers of heavy tractors frequently do not recognize the significance of these two conditions and argue that with a wide expansion of the wheel surface the pressure per square inch of surface is not greatly different from that exerted by horses, neglecting the fact that the damage is proportional not only to the pressure by square inch, but also to the actual area of surface pressed. In this way the heavier tractors with wide wheels do greater injury to the texture of the surface soil than do the lighter tractors or horses.

If the risk of damage to the texture of the soil by the use of heavy tractors in the autumn on the firm ground is great, the risk is far greater when such heavy engines are used in the spring of the year for cultivating or second ploughing of land already ploughed once in the previous autumn. In March such land, though often dry on the top, is wet and sodden below, and taking the heavy tractors upon it would cause incalculable harm to the soil. This has put the case against the heavy tractor at its worst; it should not, however, be forgotten that a farmer possessing such a tractor capable of ploughing 4 acres or 5 acres per day will be enabled in most seasons (but not in all) to get the greater part of his land

ploughed quickly after harvest in dry weather, and consequently will have no need to plough in wet weather, as he will always have to do when he relies upon horse labour only. It should also be recognised that on light porous land excessive rainfall quickly drains away, leaving the soil in such a state that it takes little or no harm from such heavy pressure.

The risk of damage by pressure through the use of motor ploughs proper is not great. In the first place the weight of the heaviest type amounts only to 30 cwt., and since many horses weigh as much as 15 cwt. the weight of this type is equal only to that of two horses; again, the motor ploughs with two or three furrows pass over the land once where the horses would have to go two or three times over the same land. In the second place one of the driving wheels of the motor plough is working in the open furrow upon the firm subsoil to which little damage can be effected, especially in view of the fact that the power of the motor plough is applied to the soil by means of angle irons or grips fixed to the circumference of the driving wheels. These grips press the soil in a horizontal direction and as the wheels revolve the subsoil is to some extent lifted by the grips.

Horse Power and Speed.—In the desire to produce a cheap and economical engine there is always a tendency to reduce the power of the engine and thus to leave too small a margin between the work which has to be done and the power required to do the work. The internal combustion oil engine, whether paraffin or petrol, is not capable of exerting extra power when the force to be overcome is greater. Its power is not flexible as is power exerted by horses, and in a lesser degree in the case of steam power. In spite of this fact there are at the present time types of both motor ploughs and motor tractors which have not the requisite power to do the work for which they have been purchased. The trouble is largely due to the fact that different types of soil require very different power for ploughing; thus, on free working soils three horses will easily draw a two-furrow plough and accomplish well over 2 acres per day, whilst on really stiff soils in wet weather the same three horses will only draw a single furrow plough and accomplish between half and three-quarter acres per day. The difficulty in the case of the larger type of tractor ploughs can be overcome by attaching a three-furrow plough on stiff land and a four or five-furrow plough on light land, but in the case of smaller tractors and of the motor ploughs proper this adjustment is not so easily possible. To a certain extent the difficulty may be overcome by supplying the motors with two-speed gears, so that the high speed may be used on light land and the low speed on heavy land; this, again, is not satisfactory, for the predominant advantage which

motor ploughing has over horse ploughing is the speed at which the work is done, and if this advantage is lost there is little object in having the motor plough at all.

The speed of horse ploughing generally varies between $1\frac{1}{2}$ miles and 2 miles per hour whilst the plough is actually in motion (*i.e.* neglecting the time taken for turning); for motor-drawn ploughing there is no reason to emulate this lower limit. On the other hand, there is every reason for speeding up the rate of ploughing to 3 and even $3\frac{1}{2}$ miles per hour. In this way not only is a greater area of ground ploughed per day, but friction is reduced and the work of pulverising the furrow is accentuated. Such a speed of 3 miles per hour can only be obtained with a fair depth of furrow when the horse power is ample. On light land perhaps 6 H.P. (nominal) per furrow will suffice, but on stiff land 8 or even 10 H.P. (nominal) will be required to attain a fair speed.

If the ploughing is to be carried out at a speed of 3 miles per hour or over, it is important that a seat be provided for the driver, since otherwise the ploughman will take care to drive at a slow speed. In many types of multiple ploughs drawn by tractors this seat is provided, but it is not universal in the motor ploughs.

When ploughing is done at this fast speed, there is a tendency for the furrows to be thrown rather wide if the same shape of breast or mould board is used as for horse ploughing; this tendency will have to be overcome by plough-makers, possibly by setting the end of the breast closer to frame of the plough or possibly by some new design.

Wheels and Grip.—One of the great difficulties in adapting motor engines to field work is that of making the driving wheels grip the soil and thus propel the engine. If the wheels slip or run round, as they are apt to do on loose ground, then the speed is reduced or the engine runs unevenly, or may stop altogether. Grip is proportional to the area of the wheel surface which is in contact with the soil, thus wide wheels obtain a better grip than narrow wheels, and for a similar reason wheels with a big diameter get a better grip than those with a small diameter, because the circumferences of large wheels are flatter, and thus a longer length of circumference is in contact with the surface at any one time. This factor of large diameter of the driving wheel is well illustrated in the "Bull" Tractor, a motor which operates a single driving-wheel 5 ft. in diameter. Secondly, the grip is dependent upon the pressure due to the weight of the wheels and engine on the ground; on the hard road for haulage this factor is very important, but on the arable land it will rarely happen that the pressure is insufficient to obtain a grip. On the other hand, as

has already been shown, too great a pressure on the land can do great injury to the texture of the soil. Thirdly, the grip of the wheels is obtained by fixing studs or angle irons, to the outside surface of the wheels; these projections penetrate the surface soil, gain a foothold for wheels, and thus tend to prevent slipping. Lastly, the grip depends upon the state of the surface soil; if the soil is hard and dry a good grip can always be obtained, but if the soil is loose owing to cultivation or spreading of manure, or soft from rain, then the difficulties are greatly accentuated. In this respect the motor plough type has an advantage over the tractor type, in that generally speaking both driving wheels of the tractor run on the unploughed ground, which may often be loose, whilst one of the driving wheels of the motor plough always runs in the furrow upon the firm subsoil, where a certain foothold is assured. It was mainly for this reason that at the recent Scottish motor plough trials at Stirling the heavy tractor types of motor plough failed to negotiate satisfactorily a hilly field, where the surface was covered with recently-spread dung, whilst the smaller "Wyles" plough, with one of its driving wheels operating on the firm subsoil of the open furrow, negotiated the same land in admirable fashion.

But of all methods for obtaining a good grip on the surface for the propulsion of motor implements on arable land, that afforded by the caterpillar device is the most satisfactory. The same device has been largely used in the past for hauling timber and other heavy material over loose ground, and has been attended with astonishing success. The device consists of a pair of endless linked chains which serve as the tracks over which the driving wheels propel the engine. The endless chain or track is continually picked up and brought forward as the engine proceeds. Some 3 ft. or 4 ft. of the tracks are in contact with the ground continuously, and the mechanism is so arranged that the drive acts over all this length of contact between the track and the surface of the soil, and therefore reduces slipping to a minimum. This device is fitted to the "Martin" motor plough, and consequently this implement is admirably adapted to working over loose land for the purpose of ploughing, cultivating, drilling, &c. There would seem to be one possible disadvantage to this device: if the soil is sticky, it would seem probable that this will pick up, clog the working parts, and wear away the bearings; actual experience not yet acquired can alone decide this question.

Fuel.—The source of power for motor ploughs and tractors is obtained from three types of fuel—light fuel oils such as petrol, benzol, and alcohol, heavy oils such as paraffin, and from coal.

The first of these, petrol, &c., when mixed with air produces an explosive mixture which, when ignited, is capable of being converted into power by means of a comparatively light engine running at a high speed. The lightness of the engine is a considerable asset, for it enables a light machine to be constructed, a matter of great importance in dealing with clay land. By reason of the light engine, all the true motor ploughs and the lightest of the motor tractors are run upon light fuel oils. The only disadvantage to the use of this fuel is its price; for agricultural purposes No. 2 petrol can be purchased free of tax at 1s. 3d. per gallon, but there is no certainty that the price will remain even at this figure, for new uses are continually being found for petrol and one must anticipate that the power of the oil trusts will gradually tend to force the price upwards.

The second type of fuel, of which paraffin is the chief, do not so readily form an explosive mixture. They do not quickly evaporate at ordinary temperatures as do petrol, &c., and consequently they require to be heated before an explosive mixture with air can be formed. In fixed paraffin engines this initial heating is accomplished with a blow lamp, then, after the engine has been started, the heat from the explosion is sufficient to keep the engine hot and to vaporise the oil. When paraffin engines are used for agricultural tractors, the usual plan is to start the engine when cold on petrol, and after the engine has been running a few minutes and has become warm the paraffin is turned on; the heat generated by the previous explosion of the petrol is now sufficient to vaporise paraffin and so the engine continues to run on paraffin. For the combustion of paraffin and the transformation of its energy into power a low speed engine is required because the rate of explosion is slower, and at the same time a considerably heavier engine is necessary. Hence this type of engine is generally associated with motor tractors of rather heavier weight than the petrol engines. Paraffin has one great advantage over petrol as a fuel, namely, the price. The present wholesale price of paraffin is 7½d. per gallon or exactly one half the price of petrol, though it is not so efficient in use. Again paraffin has now been on the market so long that its price has become more or less fixed and is not therefore likely to rise greatly in price.

Finally, there are a few types of tractors on the market which use coal as the source of fuel. Coal is used to boil water and steam pressure provides the power. From the nature of the case, these engines must be heavy; not only is the engine itself heavy, but the tractor has to carry a considerable weight of both coal and water for a day or half a day's work; and this coal and water has to be brought to the engine in the field unless there happens to be a stream or other source

of water near the field. On the other hand this type of engine enjoys the great advantage of being driven on the cheapest form of fuel, and, moreover, one which is produced in England and one which is not likely to rise in price greatly during times of peace. To this must be added the fact that steam engines are generally easier to drive than oil engines; they are well known to the agricultural labourer and consequently if such a man is put to drive them are less likely to break down in his charge than internal combustion engines.

COST OF MOTOR PLOUGHING.

There is no part of the subject of motor ploughing so important and at the same time so difficult to ascertain as that of cost. This is necessarily the case because motor ploughing in England is of such recent date that knowledge has not been accumulated. At the present time it is impossible to arrive with any degree of certainty at the rate of depreciation of the engine itself, because no one knows how many years these machines will last, though already a few of the earlier experimental types have had to be scrapped. Doubtless the life depends largely upon the design of the particular motor, but it also depends very greatly upon the care of the mechanic who drives the engine, and the farmer or bailiff who arranges for its preservation. It is also impossible to estimate with any accuracy what will be the cost of repairs.

A further difficulty arises from the fact that the cost depends very largely upon soil conditions; the soil may be light and easy working or it may be baked hard or heavy with moisture; sometimes the land is ploughed 4 in. deep at others 10 in.; and many other factors enter into the case and cause costs to vary under different circumstances.

In the accompanying tables an attempt has been made to show what are the working expenses of motor ploughing under varying conditions. These estimates do not include what are termed capital expenses, such as interest on capital, depreciation and repairs. The figures have been very kindly furnished by farmers who are using the machines and have had satisfactory results with them. Table A refers to motor tractors, and each of these three estimates are obtained by the use of the same type of tractor, namely, Saunderson & Mills' Model G 20 H.P. engines. Table B gives similar results with Wyles' Motor Plough. The figures are given for these two particular types, not because the writer considers them to be the best types of their respective classes, but because it was easier to obtain figures for these two types since greater numbers of these engines are at work now in England than of other types.

Working Expenses (not including Capital Charges) of Motor Ploughing.

TABLE A.—Motor Tractors.

	I.	II.	III.
Type of soil	Keen Limestone (Light)	Heavy Clay	Heavy Clay
Depth of ploughing	4 in. to 5 in.	5 in. to 6 in.	6 in.
Labour cost (per day):—	s. d.	s. d.	s. d.
1 engine driver	4 0	4 0	3 0
1 ploughman	2 6	3 0	3 0
Gratuities 3d. per acre to each man	3 0	Nil	Nil
Total Labour	9 6	8 0	6 0
Oil costs (per day):—	Gall. s. d. s. d.	Gall. s. d. s. d.	Gall. s. d. s. d.
Paraffin	18 at 0 7½ 10 11	20 at 0 7½ 12 11	13 at 0 7½ 7 10
Lubricating	1 3 9 2 11	1 2 2 2 0	1 2 3 2 10
Petrol	1 1 6 0 3	1 1 6 0 6	1 6 0 6
Total oil	14 1	16 2	11 2
Total cost per day	23s. 7d.	24s. 2d.	17s. 2d.
No. of working hours per day	8 hours	8 hours	7 hours
Acreage per day	6 acres	5 acres	3 acres
Cost per acre	3s. 11d.	4s. 10d.	5s. 8d.

TABLE B.—Motor Ploughs.

	IV.	V.
Type of soil	Loam	Heavy Loam
Depth of ploughing	6 in.	6 in.
Labour cost (per day):—	s. d.	s. d.
1 Driver	4 0	4 0
Oil costs (per day):—	Gall. s. d. s. d.	Gall. s. d. s. d.
Petrol	0 at 1 3 7 6	3 at 1 3 4 4½
Lubricating	1 2 9 2 1	1 2 9 1 4½
Total Oil	9 7	5 9
Total cost per day	13s. 7d.	9s. 9d.
No. of working hours per day	8 hours	7½ hours.
Acreage per day	2½ acres	1½ acres.
Cost per acre	5s. 1d.	5s. 7d.

Examining Table A first :—No. I. refers to spring ploughing in March on light land in Gloucestershire with a three-furrow plough. No. II. refers to autumn ploughing in October on heavy clay land in Buckinghamshire with a three-furrow plough; the land in this case was dry. No. III. refers to autumn ploughing in November on heavy clay land in Huntingdonshire with a three-furrow plough; the land in this case was rather wet.

The working costs have been divided under two headings: labour costs and oil costs. With this type of tractor two men are essential, one to drive the engine, the other to control the plough. Naturally the cost of labour will vary with the general price of labour in the district; in the cases quoted this cost varies from 6s. to 9s. 6d. per day. The oil costs include paraffin, lubricating oil, and petrol. The consumption of paraffin per acre varies largely with the characteristics of the soil, though the consumption per hour seems to be more or less constant. This is due to the fact that the engine can be driven at a faster speed over light land than heavy land. Thus in No. I. on light land and easy working conditions six acres are accomplished in eight hours by a three-furrow plough, whilst in No. III. on heavy land which is somewhat wet only three acres are accomplished in seven hours of actual ploughing.

The total cost per day for working expenses works out to about the same figure in each case, but owing to the variation in the acreage accomplished, the cost per acre varies considerably, from about 4s. per acre on light land up to about 6s. on heavy land.

Although it is impossible to state with any degree of accuracy, for reasons previously given, what are the capital costs of motor ploughing, it may be worth while to consider the order of magnitude of these costs under a given set of conditions. Saunderson & Mills' Model G, the tractor referred to in Table A, was purchaseable last year complete with multiple plough at 325*l*. It has been suggested to the writer by a user of such an engine that the life of the engine may be six years or over. If it be assumed that the life is six years, the depreciation of capital per year will be $\frac{1}{6} \times 325\textit{l} = 54\textit{l}. 6\textit{s}. 8\textit{d}.$ per year.

The interest on the capital must not be charged on the full figure of 325*l*., but upon half this figure, as the capital depreciates from 325*l*. to nil. The interest is then chargeable on $\frac{325\textit{l}}{2} = 162\textit{l}. 10\textit{s}.$ If the rate of interest is put at 5 per cent., then the interest per year amounts to 8*l}. 2\textit{s}. 6\textit{d}.*

The repairs are another unknown figure: for purposes of estimate it is assumed that they will be in the neighbourhood of 10*l}. per year.*

Thus the total capital charges, adding depreciation, interest, and repairs, amount per year to 72*l}. 9\textit{s}. 2\textit{d}.*

We have now to estimate how many days in the year work can be found for the engine, including ploughing, hauling, threshing, &c. Under varying conditions different owners have suggested amounts varying from 80 to 160 days per year. If we assume that the average number of working days to be

120, then the daily cost of the capital charges amounts to
 $\frac{72l. 9s. 2d.}{120} = 12s. 1d.$ per day.

If this figure be added to the total daily cost of ploughing, this will amount to 35s. 8d. in No. I. and 29s. 3d. in No. III., and the total cost per acre of ploughing in No. I. will be 5s. 11d.; and in No. III. 9s. 9d. It must, however, be remembered that the estimate of the life at six years is purely arbitrary, and with careful management there is no reason why its life may not be greatly increased. On the other hand it is equally possible for an ignorant driver to break the engine in a much shorter time.

In Table B the working costs of ploughing have been set out in the same way as in Table A. In both IV. and V. the costs refer to a Wyles' Motor Plough hauling a two-furrow plough, in both cases the soil was a loam, though in No. V. the soil was somewhat heavier than in No. IV.

The consumption of petrol in No. IV. was considerably greater than in No. V., and seems to suggest that in No. IV. the best results were not being obtained from the fuel, a condition which is extremely likely to occur if the driver does not properly understand the working of the engine, carburettor, &c. The costs per acre in each case do not vary greatly, but doubtless if it had been possible to obtain figures relating to lighter and heavier land the costs would have varied in the same way as in Table A.

In the case of the motor plough no attempt has been made to estimate the cost of capital charges, because motor ploughs are even less mature than motor tractors. They must at present be regarded as still in the experimental stage and consequently weaknesses are liable to keep cropping up, and therefore the average life of such machines will not be great. Further, since motor ploughs are not so adaptable as motor tractors to other farm purposes, the number of days' work which can be obtained from them per year will be less, so that this will tend further to increase the capital cost per acre. Speaking generally, therefore, it is probable that the capital cost per acre for motor ploughing is greater than that of motor tractor ploughing.

THE ECONOMY OF THE MOTOR PLOUGH.

It has just been shown that motor ploughing may be performed in most cases at a slightly lower cost than horse ploughing. This fact alone will not justify a farmer in purchasing a motor plough unless there are other attendant advantages and unless in particular it will enable the farmer to dispose of some of his horses.

Let us now examine for what purposes other than ploughing the motor engine is capable of being used. These purposes naturally vary with different types of engine; the heavy and more powerful types of tractor are generally speaking more versatile than the lighter tractors and than the motor plough engines. These heavy tractors are particularly valuable for all kinds of road haulage; they are both quicker and cheaper than horse power. For this type of work the lighter forms of motor plough and tractor are useless, because, being light in weight and not allowed to use grips on the high road, they are unable to act on the road. In this respect it may be well to warn would-be purchasers from accepting American experience on this matter, for in America country roads are often unmetalled, and consequently light tractors with grips are enabled to haul considerable loads on them.

Whilst the heavy tractors are the more suitable for road haulage, the lighter tractors and such motor plough engines as are adaptable are more suitable for such operations as cultivating ploughed land, hauling drills or rollers or harrows, since for these purposes the heavy tractors will, with few exceptions, cause considerable damage to the texture of the soil. For such work the Martin, with its caterpillar device, and the Crawley should prove perhaps the most suitable.

Again, most forms of tractors and motor ploughs are capable of being advantageously used for grass cutting and for reaping and binding. The smaller engines will haul one of either, whilst the more powerful are capable of hauling two grass cutters or two binders. For this purpose again the low-powered engines with one binder are more suited to small fields, where the bigger tractors are out of place; whilst on big fields, when conditions are favourable, the more powerful tractors hauling two or more binders are capable of doing very economical work; unlike horses they do not tire, and therefore such an outfit hauling two binders and employing three men, may keep at work from daylight till dark and do the work of perhaps twelve horses per day.

Lastly, most motor ploughs and engines are fitted with a pulley-wheel, by means of which and a belt they are capable of driving fixed machinery; the weaker machines are capable of light work only such as chaff-cutting, root-pulping and the like, whilst the more powerful tractor types are capable of such heavy work as threshing and grinding.

Next, the question arises as to whether a farmer who has purchased a motor plough can dispense with any of his horses. It needs no power of argument to show that a motor plough capable of ploughing 5 acres of light land or 3 acres of heavy land per day is doing the work of about ten horses, but

this is no answer to the question if the farmer will still need his full staff of horses for such operations as seeding and harvesting.

In order to answer the question correctly, it is important to appreciate the seasons of the year when horse labour is most pushed. On arable farms the times of greatest stress as regards horse labour are firstly autumn ploughing and sowing, secondly, spring sowing, and thirdly the harvest period, and especially the cutting of the corn. Now it is exactly at these three periods of the year that the motor plough should give relief. By getting a quick start with motor ploughing in autumn, whilst the horses are engaged in dung carting or cleaning the couch from one or two foul stubbles, the land will be ready and in good tilth for autumn seeding in October and November. The spring seeding will be lightened by the fact that a full breadth of autumn corn has been sown and by the fact that the ploughing for the spring corn will have been done in good weather. And perhaps the heaviest work of all for the horses—hauling the binder—will be taken partly or entirely by the motor engines, thus enabling a start to be made with the carting as soon as the corn is fit to carry instead of waiting till all is out as is sometimes inevitable under present circumstances.

By these means, the lightening of horse work at the periods of greatest stress, it can be seen that on large arable farms the motor plough engines will enable the farmer considerably to reduce his horse staff. By practical farmers owning an outfit capable of hauling a three-furrow plough the reduction of horses has been variously computed at three or five horses. If the horses are valued at 60*l.* apiece it will be seen that the saving in capital on horses is comparable to the cost of the motor plough.

Lastly, it has been indicated in an earlier part of this article, that the motor plough enables the farmer to cultivate his land at the correct time and so lessens the two greatest difficulties in corn cropping; it will reduce the weeds, the competitors of the crops for supplies of water and manurial constituents from the soil, and so lessen the need for the unprofitable bare fallow and root crop. Further it will lessen the difficulty of preparing a seed-bed by breaking the land up when in a dry condition, and again, it will enable a greater area of land to be cropped with autumn-sown crops, crops which in the case of wheat and beans, and in many districts oats, are far more satisfactory than when spring-sown.

Organisation.—It has previously been stated that the double engine steam ploughs have been and are capable of very useful agricultural work, especially when they are employed

upon very large farms of 1,000 acres of arable land and upwards, but that their value is much restricted when they are owned by a local engineer, who in turn hires them to farmers. Motor tractors and motor ploughs are more readily organised because on the one hand the capital outlay involved and the output of work per day is considerably less, and because motor plough and tractor engines can generally be set to many other uses besides ploughing. Yet it must be clearly understood that such outfits may not be justified upon small farms in which the capital outlay per acre may rise to too high a figure.

In order to justify the purchase of a 20 B.H.P. tractor, capable of hauling a three-furrow plough on heavy land, the farmer would need at least 250 acres of arable land, and the outfit will be far more economical if the area in question amounts to 500 acres of arable, for which area probably such an outfit would be ideal.

The small tractors and motor ploughs, drawing only two furrows, are on the other hand not so suitable to such large areas of arable. For farms ranging from 150 to 250 acres of arable land these two-furrow outfits, provided they are reliable, may be expected to prove the more economical.

If a farmer can rely upon obtaining ploughing work upon his neighbours' farms, or if the engine can be put to road haulage or other work for considerable periods of the year, the purchase of the outfit will also be justified upon smaller holdings.

POSSIBLE IMPROVEMENTS.

It will be generally recognised that motor ploughing is in its infancy; both the engines and the cultivating implements are capable of great improvements in many directions. It is possible that experience will show that the present type of implements may have to be replaced by others founded on entirely new ideas; the plough was originally designed for slow-moving horses or oxen; it is now being harnessed to a high-speed (in the sense of speed of revolutions) engine. In order that improvement may be expeditious, it is important that makers should co-operate with that type of farmer who thinks deeply and reflects about his business.

Possibility of the Balanced or One-way Plough.—All motor ploughs at the present time have fixed breasts, consequently all motor ploughing is left in lands or ridges with open furrows between. This condition is quite satisfactory for undrained clay land, because it assists surface water to drain away, but for all other types of land, this condition has many obvious disadvantages when compared with ploughing which has been laid all one-way as by a balanced or a turn-breast

plough; firstly, the field has to be carefully set out before ploughing, secondly, in finishing each land the engine has to run over the freshly ploughed ground, lastly the surface of the field lies uneven for all the subsequent operations of seeding, harvesting, &c. No English maker has yet marketed such a balanced motor plough, but these implements have been under experiment on the Continent, notably the French Benedetti motor plough, which is a tractor capable of ploughing in both directions, being equipped with two sets of ploughs, one at either end.

Types of Multiple Ploughs.—Until quite recently all types of multiple ploughs used for motor ploughing or for steam-ploughing have been constructed with rigid frames. If all the conditions are quite favourable, good work can be done with these ploughs, but this is by no means always the case, and one frequently sees wretchedly bad ploughing when, for instance, the steam plough has been at work. The causes of this are various: if the ground is uneven, perhaps lying in S lands, the big multiple ploughs pitch and rock, ploughing too deeply at one place, too shallow at another; or, again, if the ground is very hard, there is great difficulty in getting the plough quickly to its full depth at starting. This difficulty of the rigid frame has been recognised in America, where types of multiple ploughs are being constructed in which a set of ploughs (two or more) are separately attached to a horizontal bar, which in turn receives the pull from the tractor. Owing to the fact that these ploughs are separately attached, they act as independent ploughs, are less affected by unevenness of the surface, and drop in more quickly to the full depth of the furrow after turning. Some of these ploughs are fitted with a trip device, by which the engine driver, from the footboard of the engine, pulls a string at the end of the furrow, causing the ploughs to ride up out of the furrow. After turning, and when the plough is in position, the driver pulls the same string a second time, which releases the catch, and the ploughs drop into their work instantaneously. This device dispenses with the second man generally required in tractor ploughing, provided there are no obstacles to straightforward work.

The use of the Digging Breast.—The short-breasted digging plough, though very extensively used in foreign countries on account of its lighter draught and its action on the soil of the furrow, has never been very popular with English farmers, for the reason that with horse ploughing, so large a proportion of the ploughing has to be done when the soil is really too wet for good work by this type of plough. The long-breasted common plough is designed to turn the furrow slowly, without breaking the soil and without doing any "work" on the

furrow, whilst the short-breasted digging plough turns the furrow sharply and in so doing "works" the soil and leaves the furrow more or less shattered. Unquestionably on dry land we want to get the furrow shattered and broken, but such ploughing on the field has a nondescript appearance in comparison with the aristocratic clear cut furrows of the long-breasted plough. The latter looks better, and, at the usual time of ploughing matches, November and February, when the ground is wet, this practice of turning an unbroken furrow is correct, for the furrow will not break when wet, but it is not the best practice when the land is dry.

Now in the case of motor ploughing the land should generally be dry when ploughed, and under these circumstances the short-breasted digging plough may be expected to give the better results. Yet, at the four demonstrations of motor ploughing, attended by the writer this year, though the ground was in each case in beautiful order, most of the ploughs used were of the long-breasted type; the work done was pretty, but its value compared unfavourably with that of the less beautiful but more broken work of the few digging ploughs on exhibit.

At the motor-plough demonstration at Chelmsford the work of a multiple disc-plough was demonstrated, and certainly the condition of the furrow on dry land left little to be desired; it was turned well over and was completely pulverised. The draught of this plough, however, appeared to be heavy compared with other types.

New Types of Implements—Diggers.—Lastly, the question may be asked: has the day come with the introduction of the high-speed motor engine for the development of some entirely new type of implement? Is it possible to devise some form of power digger which will supersede the plough? Attempts in the past to make such implements have not been successful, but with this new form of power the possibilities are made greater. Already one or two types of such implements, notably in France, are being tested experimentally, and may in time be developed into valuable implements. The principle of this power digger consists of a revolving axle fixed to the rear of the engine. A number of curved tines are fixed to this axle which, as the axle revolves, strike and turn over the soil. Such a method of cultivation has one great mechanical advantage over the plough, the work done by the digging axle in throwing the earth backwards tends to force the engine forwards and so reduces the power required to haul the engine. In the case of the plough, the direction of the work of the plough is in the opposite sense; the furrow presses against the forward motion of the plough, and consequently the engine has not only to do

the work of ploughing, but at the same time that of hauling itself forward. Before such implements can become serviceable many difficulties will have to be overcome, difficulties which can only be appreciated when the implements are being tested in actual practice, but there is a prospect that they may succeed. Perhaps such implements will be found to be more suitable for preparing a seed-bed after the plough than for work on unmoved land.

In conclusion the writer wishes to express his thanks to the following gentlemen, who have kindly supplied figures for the cost of motor ploughing on their farms:—Mr. Alexander Iles, Fairford, Gloucestershire; Mr. R. Anthony, Hardwicke Manor, Eynesbury, Hunts.; Mr. H. R. Overman, Brampton Ash, Market Harborough; Mr. S. T. Pike, Manor Farm, Banbury; and Mr. Selwyn Caudwell, Wallingford.

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FARMERS AND THEIR INCOME TAX ASSESSMENTS.

FOR many years farmers have enjoyed a unique position in the matter of their assessment to income tax. The ordinary trader or manufacturer is assessed under Schedule D, by which he is required to make a return of the actual profits of his trade, and this forms the basis of his assessment. The farmer also could make a return under this Schedule, but as it was recognised that few agriculturists were in the habit of keeping records of their transactions which would enable them to compile it, an alternative method of assessment was adopted, and farmers making no return of their profits were assumed to have made an income equal to one third of their rent. Making allowance for the statutory exemption this meant that, in cases where the farmer had no other sources of income, he was able to escape from the payment of tax so long as his rent did not exceed £80^l. per annum. Such an arbitrary method of assessment can only be justified on the score of simplicity and convenience, and not a few people are of the opinion that by accepting the fact that farmers, as a class, were averse from troubling to keep account of their dealings, the Treasury was putting a premium on slipshod business methods, and there is small reason to doubt that if Schedule B had never been instituted, or if it

were even now to be abolished, a great impetus would be given to more accurate accountancy on the farm, and that this would react very beneficially on the organisation of the industry.

Be this as it may, it seems probable that the alteration in the rate of assessment under Schedule B made by the recent Budget, by which the income of the farmer will be held in future to be equivalent to his full rent, will lead many men to consider the advisability of estimating their actual earnings, with a view to making returns under Schedule D, and as enquiries are being made as to how these returns can be compiled, a few notes and suggestions to that end seem to be called for. There is no doubt but that the best course to be followed by every farmer in business on any scale is that he should adopt a system of scientific book-keeping which will enable him to determine the cost of production on his farm. Not only will such a system enable him to prepare an accurate profit and loss account for the Surveyor of Taxes, but by directing the farmer's attention to his main sources of profit, and to his chief causes of loss, it will enable him so to develop and organise his business as to make it more productive both for himself and for the community. The principles of cost accountancy cannot be described here, for the details would require a volume to themselves,¹ but nothing less than the determination of farming costs should satisfy the farmer willing to take the trouble to keep accounts. This is, however, by the way, and the object of this article is less to show the farmer the utility of accounts, than to show him an easy and accurate method of returning his income to the tax office, for assessment under Schedule D.

A farmer's profits may take the form of cash in the bank, derived from the sale of produce at a price higher than the cost of production, or it may be in the form of increased stock or fertility on the holding. Or it may be partly in one form and partly in the other. It is at once obvious, therefore, that two things are absolutely essential to enable a return to be made under Schedule D; first, there must be an annual valuation of the live and dead stock and of the tenant-right, and second, there must be a cash account for the farm kept entirely apart from the farmer's house and personal expenditure. The difference between the valuation at the beginning of the year, *plus* the cash paid during the year, and the valuation at the end of the year, *plus* the cash received during the year, is the net profit on the farm for the year. The simple statement of the position, taking an imaginary case, would be as follows:—

¹ For a description of cost accountancy on the farm see the writer's book on *Farm Accounts* (Cambridge University Press).

BROAD ACRE FARM.

Statement of account for the year 1915-16.

<i>Liabilities.</i>			<i>Assets.</i>		
	£	s. d.		£	s. d.
Valuation at beginning of year	2,500	0 0	Valuation at end of year	2,450	0 0
Payments during year ...	800	0 0	Receipts during year ...	1,100	0 0
Profit for year ...	250	0 0			
	<u>£3,550</u>	<u>0 0</u>		<u>£3,550</u>	<u>0 0</u>

The difference between the payments and the receipts is, of course, the balance of the cash book, or pass book, so that the figures may be stated even more briefly, thus :—

<i>Liabilities.</i>			<i>Assets.</i>		
	£	s. d.		£	s. d.
Valuation at beginning of year	2,500	0 0	Valuation at end of year	2,450	0 0
Profit for year ...	250	0 0	Bank balance at end of year	300	0 0
	<u>£2,750</u>	<u>0 0</u>		<u>£2,750</u>	<u>0 0</u>

At the same time, it must happen in ordinary practice that there is a balance in the bank, or an overdraft, at the beginning of the year, and this must be allowed for in preparing the statement, otherwise the profits will be unduly inflated or depressed. The statement will then run as follows, assuming an initial balance of 200*l.* :—

<i>Liabilities.</i>			<i>Assets.</i>		
	£	s. d.		£	s. d.
Valuation at beginning of year	2,500	0 0	Valuation at end of year	2,450	0 0
Bank balance at beginning of year	200	0 0	Bank balance at end of year	500	0 0
Profit for year ...	250	0 0			
	<u>£2,950</u>	<u>0 0</u>		<u>£2,950</u>	<u>0 0</u>

These figures and explanations should suffice to show the principle on which the return is to be constructed, and assuming that this is now clear, one or two additional points must be dealt with, for though they have nothing to do with the theory of the calculation, they are bound to occur in practice. In the first place a good many bills belonging to the previous year will not be received until the early weeks of the year under consideration. These must be paid, and paying them will reduce the cash balance due to the buying and selling of the year, so that the total amount of the bills must be added on to the asset side of the statement to prevent the undue depreciation of the profit. In a similar way, some of the bills properly belonging to the year will not be received

until after its close, and these must be added up and included on the liability side—otherwise the profits would be unduly inflated. Once more taking imaginary figures for these items, the statement will now appear thus :—

<i>Liabilities.</i>			<i>Assets.</i>		
	£	s. d.		£	s. d.
Valuation at beginning of year	2,500	0 0	Valuation at end of year	2,450	0 0
Bank balance at beginning of year	200	0 0	Bank balance at end of year	470	0 0
Bills unpaid at end of year	180	0 0	Last year's bills paid during this year ...	210	0 0
<i>Profit for year</i>	250	0 0			
	<u>£3,130</u>	<u>0 0</u>		<u>£3,130</u>	<u>0 0</u>

Lastly, it must be remembered that the farmer has got to live during the year, and that in all probability he will have to transfer sums of cash, from time to time, to his private account. If these were ignored they would have the effect of reducing the bank balance at the end of the year, and consequently, of showing a profit balance fictitiously low, or even non-existent. It is therefore necessary to include these private drawings amongst the assets, and so the final completed statement ready for the Surveyor of Taxes will be in the following form :—

BROAD ACRE FARM.

Statement of account for the year 1915-16.

<i>Liabilities.</i>			<i>Assets.</i>		
	£	s. d.		£	s. d.
Valuation at beginning of year	2,500	0 0	Valuation at end of year	2,450	0 0
Bank balance at beginning of year	200	0 0	Bank balance at end of year	210	0 0
Bills unpaid at end of year	180	0 0	Last year's bills paid during this year ...	210	0 0
<i>Profit for year</i>	250	0 0	Cash withdrawn during year for private use ...	230	0 0
	<u>£3,130</u>	<u>0 0</u>		<u>£3,130</u>	<u>0 0</u>

Such a statement is a complete and accurate account of the farmer's financial position. It is not book-keeping, but it will not meet with condemnation by agriculturists on that account. Indeed, the fact that it entails no keeping of labour sheets and ledgers throughout the year should commend it to those whose whole requirement in the matter of farm accounts is summed up by them in the two words "something simple."

It now becomes necessary to see what precautions are necessary in order to satisfy the commissioners of income tax that this statement, unsupported by books of account, is a

accurate summary of the farmer's profits. In the first place, it is absolutely necessary that the farm bank account should be kept entirely separate from the farmer's personal account. It is probable that most farmers at the present time have one account with their bankers for both purposes, but the idea of separating the two need not trouble them, for banks will be found quite willing to divide the account and to issue cheque books marked "Farm Account" and "Personal Account." Having arranged for a separate bank account for the farm, the next essential is to see that all money received is paid into the bank, and that all payments are made by cheque. This will make it impossible for the farmer inadvertently to use cash receipts for the farm for making small cash payments of a personal nature. Cash received could quite properly be used for farm payments, but to avoid mistakes it is far better to adhere to the rule of paying it into the bank, and money can be drawn out of the account by cashing a cheque from time to time for making money payments.

Lastly, the farmer must have an annual valuation of his live and dead farming stock, tenant-right, &c. Most farmers would be perfectly competent to make this themselves, but with a view to satisfying the income tax authorities the better plan might be to employ the services of a professional valuer. It is probable that valuers would agree to make these stock-taking valuations for a special fee, particularly if this class of business is likely to become extensive under the new budget provisions. The farmer, too, could help to reduce the work, and consequently the cost, by providing the valuer with a tabulated statement of tillages performed, manures and feeding stuffs used, numbers and classes of live stock, implements, &c., before he came on to the farm.

If there is any likelihood of a considerable movement in the direction of returns by farmers under Schedule D, agricultural valuers might do well to consider what they could do in the matter, both to give assistance to the farmer and to extend their own sphere of work. They might make known their willingness to undertake the preparation of the annual statement of affairs for farmers, on the lines here indicated. The farm pass-book and the outstanding accounts would supplement the figures of the valuation, and the valuer could produce the statement and certify it for the Surveyor of Taxes.

In preparing a statement for the second or subsequent years, the figures of the previous year will be the basis upon which to work. Taking the final statement appearing on page 24, the statement of the position at the end of the next year, 1916-17, would be started thus :—

BROAD ACRE FARM.

Statement of account for the year 1916-17.

<i>Liabilities.</i>			<i>Assets.</i>		
	£	s. d.		£	s. d.
Valuation at beginning of year	2,450	0 0	Valuation at end of year		
Bank balance at beginning of year	240	0 0	Bank balance at end of year		
Bills unpaid at end of year			Last year's bills unpaid during this year ...	180	0 0
Profit for year ...			Cash withdrawn during year for private use ...		
	£			£	

The blank spaces must then be filled in according to the figures shown by the new valuation, bank book, &c.

Farmers who already keep some sort of an analysis of their receipts and payments will doubtless adopt the form of return set forth in the leaflet issued by the Board of Agriculture (No. 26), but those who keep no books can arrive at precisely the same result without trouble and without any special knowledge by following the procedure set out in this article. Let it be remembered that the statements are merely income tax returns, and not book-keeping, and that the farmer who has a proper regard for his position in the world of industry will not be satisfied until he has mastered a system of departmental or cost accounts. The abolition of Schedule B would do more to show farmers the importance of book-keeping than all the arguments of a generation of writers and lecturers.

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DAIRY HUSBANDRY IN LANCASHIRE AND CHESHIRE.

THE counties of Lancashire and Cheshire have both considerable special advantages in respect of their markets for agricultural produce. Lancashire has her large centres of industrial population, especially in the southern half, and Cheshire, though less bountifully supplied with populous towns, is within fairly easy reach of those of Lancashire, and she has also in the Potteries, on her southern borders, a well established centre for the disposal of large amounts of her agricultural products. This readiness of market naturally re-acts on the type of farming practised, enhancing the opportunities for variety of procedure and cropping, the capacity for making one branch fit into and assist another, and the development of a special branch of agriculture as the main system of business in a manner that does not obtain in districts less favourably located.

Of the two counties Lancashire is, largely on account of greater size and irregular shape, much more varied in its general agriculture. From the extreme north of the detached Furness district where the beautiful rivers of Duddon and Brathay form the boundary with Cumberland and Westmoreland, the Herdwick sheep rules paramount as the mainstay of the dalesman's life and husbandry, with scarce an acre under the plough, and then through innumerable gradations and variations of tillages and systems till, when the Mersey is reached, it is possible to find considerable tracts where sheep are hardly ever seen, few stock of any kind kept, and the land cultivated with a view to supplying special produce for the demands of neighbouring towns and for utilising, on the other hand, the very considerable amounts of manure that they are able, in return, to supply to the farmer. Speaking in general terms the northern part of the county, extending from a line drawn east and west from Clitheroe to the estuary of the river Wyre, is largely concerned with the cattle raising industry. For a long time the great excellence and high class of the Dairy Shorthorn type carried on the ordinary farms and reared on a commercial basis, has been widely acknowledged and has formed an acceptable source of supply for good milking stock far beyond local or provincial bounds. From the Preston sales alone large numbers of the best class of dairy cows are distributed throughout the kingdom. Nor is the rearing confined to one particular soil or district; it is carried on in a skilful manner alike on the high-lying grass lands adjoining the Fells,

such as Littledale, Wray and Leck, as in the fertile Vale of Lune, the deeper soils of the Garstang district, or the varied lands in Furness. It is difficult to over-estimate the value to North Lancashire that has accrued through the consistent and altogether praiseworthy determination to raise cattle of the sort that good parentage brings, and this fact has undoubtedly proved its value by results such as less well-bred or less thrifty animals could not have given during those thirty years in the immediate past when agriculture had severe difficulties to contend with.

The southern and wider portion of the county is less purely stock-raising and more given over to increased acreages of tillage so far as its western part is concerned. The deeper alluvials and loams lying between the coal measures and the sea have large areas under the plough, and a rotation largely designed to provide a plentiful supply of bulky food for milk production, and such as will meet a demand in those industrial districts which lie to the east of a line running through St. Helens, Wigan and Blackburn, with all their large commercial towns and populations. This eastern portion is, for the most part, of the distinctly hilly type found in association with the millstone grit—thin, light soils predominating—but nevertheless yielding considerably of agricultural products where encouraged by the local requirements in the immediate neighbourhood of populous centres. Extensive “moss” deposits are found at Barton, Glazebrook, Riseley and Rixton, and also detached portions at Rainford, some four miles north of St. Helens. Most of these moss areas have been, or are being, brought into cultivation, and a good example of gradual reclamation is furnished in the case of Rainford moss, where upwards of 200 acres of deep peat is still left in its original state, standing several feet above the surrounding tillage lands which have, slowly but surely, eaten into it on all sides by removal of the upper layers, drainage, and ultimate cropping, assisted frequently by the use of the underlying beds of rich marl, in the efficiency of which for reclamation purposes, local belief is justly strong.

Cheshire, besides being smaller than Lancashire, having a total area of approximately 654,000 acres as against 1,197,000 acres of the latter, presents less extreme differences in the agriculture within its boundaries, thus following the more uniform character of its surface both in configuration and in soil. There is also, as might naturally be expected in a more rural county, a greater proportion of land taken up in farming pure and simple, Cheshire showing about 80·07 per cent., and Lancashire about 64·80 per cent. of their whole areas under agricultural cultivation and grazing. All except a very small

proportion of the county is comprised in the Cheshire plain formed by a deep drift of boulder clay and sands, with occasional peat and gravel deposits covering the triassic rocks up to a depth of eighty to one hundred feet. Some of the clays are exceedingly stiff, and owing to the flatness of surface are apt to be too soft in winter for arable cultivation or for the turning out of stock upon them; these underlie some of the well-known permanent pastures on which cheese is made, and whose productive capacity has increased largely during the recollection of some of the older agriculturists. Except on the areas of heavy clay the system of general agriculture is like that of south-west Lancashire—cereals (excepting barley), clover, roots and potatoes, and in south-east Cheshire, rye as a straw crop to supply the Hanley district of Staffordshire with a packing material for the transit of valuable earthenware goods. The eastern and north-eastern borders are an upland country of hill-grazings, some six miles wide and twenty-four long, on the millstone grit and coal measures, extending from Congleton to the Stalybridge district. A large portion of this is known as Macclesfield Forest, and on its western margin, where the proximity to the towns, such as Bollington and Macclesfield, admit of milk being sold, it carries a substantial head of cattle for the dairy; on more remote places the chief industry is the raising of stores for the ultimate replenishment of dairy stocks on the lower lands, for which purpose they have proved eminently suitable. The more northerly and narrower part of the district is akin to the adjoining parts of Lancashire being in close touch with the large industrial centres of Stockport, Hyde, Ashton, Stalybridge and Dukinfield as well as very considerable residential places. The only moorland proper occurring in Cheshire lies in the extreme north-east corner, marching with Yorkshire, in a somewhat detached portion of under twenty square miles, representing the Woodhead district.

East Cheshire carries some sheep as breeding flocks—the Gritstone breed on Macclesfield Forest as example—but although most farmers maintain a few sheep in the low ground they are in nearly every case kept only as a flying flock and are disposed of with their produce after seeing a summer's grass keep and yielding a crop of lambs to a Leicester, Shropshire or other suitable breed of ram. The Delamere Forest portion of the county is a continuation of the narrow, hilly tract of sandstone originating near Malpas and running north-west which, opening out, forms an area rising to nearly four hundred feet above sea level in the highest places, and usually providing light types of soil particularly adapted for early varieties of potatoes. A good deal of this land has been reclaimed from forest, and occasionally the shaly marl which is found in places has been used, as

in Lancashire, for assisting the process of bringing the land into a state suitable for the growth of crops. The more extended practice of marling, which once held good all over Cheshire, as evidenced by the ever-present ponds or pits, has been discontinued for many years on the stronger loams and clays where the amounts spread eighty years ago ran to an estimated cost of at least 5*l.* per acre, and probably resulted in little or no benefit. Indeed, in some instances the marl was little different to the surface soil, and its application meant labour thrown away. A marl bed which bore a traditional reputation for richness and for agricultural utility in the past was examined last year, and it was found to be entirely innocent of anything that could promise benefit to the land for many miles round. Of the peat deposits occurring in Cheshire, the most important and extensive is that at Carrington, near the banks of the Mersey. It is about two-and-a-half miles long and one mile wide and is in a high state of cultivation. It is used by its owners, the Manchester Corporation, for the disposal of their organic surplus manure, and on it is situated the well-known and highly farmed holding of Moss Hall. A proportion of the farms in this district, both on moss land and on the sandy loams around Timperley, Baguley, and Sale, do little in the way of stock-keeping, but devote their energies to the growth of crops for the Manchester market.

Speaking generally, the system of cropping and rotation in both Lancashire and Cheshire is characterised by freedom from any fixed formula or rigid mode of rotation. The advantage of this is manifest in that the needs of the immediate market can be more easily met from time to time, by the substitution of crops in periods when the demand for any particular one may be diminishing. Both stand as counties producing largely of potatoes—Lancashire with over 43,000 acres last year and Cheshire with 22,000—and each give a big proportion of cultivation to seeds for hay, whilst permanent grass is also largely represented. Of the cereals, oats are far more frequently grown than the others, largely owing to the fact that they are specially useful both in grain and straw for home use, and likewise none the less easy to sell if not so required on the farm. Wheat is pretty generally sown when the autumn conditions prove favourable, but if the season be wet, or work delayed, reliance is more often placed on oats as the cereal for the year; this preference is further encouraged by the fact that it is the usual and most generally satisfactory corn crop in which to secure a plant of clover for the succeeding year's hay crop. Barley is seldom attempted unless it may be desired for home use, the climate being rather too humid and the soils in too high "heart" to produce anything beyond a sample

suitable for this purpose. According to the Agricultural Returns the acreage devoted to root-crops appears small, but, on the other hand, the average weights obtained per acre are usually high, and the area under turnips and mangolds is very frequently supplemented by other green crops, like cabbage. A somewhat special feature of Cheshire rotation practice is that of allowing land to lie down in grass for five or six years, after which time its freshness and productivity seems to wane; when inferiority of herbage begins to manifest itself the turf is broken up, the land is put through a course of cropping, and is then again laid down for a period of years. This excellent practice is beneficial in two ways—as a check to insect and fungoid attacks which a continuous and intensive system of cropping may have encouraged, and conversely, as a provision of fresh grazing instead of an old pasture. There is no doubt that this method enables a larger and healthier stock to be carried on land adapted to general arable culture, and the custom amongst some farmers of keeping the young dairy cattle and calves on fresh clover “root” in the autumn tends to their good growth and freedom from parasitic attacks in the throat.

The cattle population of Lancashire and Cheshire is specially interesting because of the large numbers maintained as cows and heifers for milk production. Lancashire has a higher number of these than any other English county, and at the same time it provides a large head of animals for feeding and general commercial beef production. Cheshire has a still more close stocking of dairy animals, because practically all the 80,000 head classed as “other cattle” are being saved for the sole purpose of milk production. It is very infrequent to see any male horned-stock save a bull on an ordinary Cheshire holding, the whole of the young stock are heifers and heifer calves selected for rearing with a view to filling up the vacant places in the ranks of the milkers that go out each year from one cause or another. Drainage of pasture land and the consequent increased facilities for tillage and temporary pasture just mentioned have greatly increased the cattle-carrying capacity of Cheshire, which is now capable of maintaining 27,000 more milking cows alone than was the case, according to Fenna's report, prior to the execution of efficient field drainage.

The milk-selling department of dairy husbandry is intimately connected with, and largely dependent upon, the railway system of a district. Lancashire and Cheshire are fairly well off in this respect, and except perhaps in north-west Lancashire—chiefly that district lying east of Garstang and Lancaster—there are not a great number of places without a railway station within four miles; some, however, even within such a distance are unsuitably placed as regards accessibility through steepness

or winding character of road and are obliged to carry on a style of farming less exacting in daily requirements than dairying. In contrast, Cheshire, with its more uniform levels and consequent ease of draught, is less liable to difficulties of this kind, no small number of places producing milk and sending it some five or six—or even eight—miles by road for delivery. The valley of the Ribble is a well-known source of supply for Lancashire milk; and it had an old-standing business association with the town of Blackburn, but now the milk chiefly passes on to Bolton, Salford, Manchester and Farnworth, and a portion goes through Preston towards Southport and south-west Lancashire. The Clithero, Chatburn and Pendleton neighbourhoods are contributors through one organised source alone of something like 2,600 gallons daily for the Bolton and Manchester area. The mid-Lune and north Lunesdale districts, well known as prominent in the cattle-raising line, have begun to develop more fully the milk industry within the last few years and besides creating a supply for the new creamery at Barbon, just outside the northern boundary of Lancashire, they send milk further afield by means of the Midland and Furness Railways to Barrow on the one side and to Bradford and Leeds on the other. The upper reaches of the Lune valley indeed are even able to send milk, though in limited quantity as yet, as far across country as Newcastle-on-Tyne, by means of the North Eastern line from Tebay to Darlington. Down the main London and North Western line between Carnforth and Preston there is also a district convenient for the supply and transport of milk. Most of this finds its outlet in the same district as that from Ribblesdale, by ultimately reaching Bolton and north Manchester, a smaller portion being deflected to St. Helens and Wigan.

The Fylde has also a market in the Bolton, Farnworth and north Manchester district, and sends a portion of its milk to Wigan, but is more closely connected with the important demand from Blackpool, Southport and St. Annes, part finding its transport along the coast and part through Burscough towards Liverpool. From one set of figures available, involving a considerable amount of milk dispatched from a single place in the Fylde every day, the summer supply taken by Blackpool is almost exactly double of that required in winter; for Southport, on the other hand, out of a larger total disposed of than in the case of Blackpool, two-thirds were required during the winter and only one-third during summer.

Out of a large total daily supply of Lancashire milk, railway-borne to various centres, the following figures have been drawn up and may serve for purposes of illustration and comparison between eight important areas :—

Area of Production.	Proportion of total supply per cent.	Destination.
Mid-Ribble and Clithero	24.6	Manchester.
South Preston and Hoole district	13.4	Sonthport.
Fylde	10.4	Blackpool.
Clithero, Craven, Mid-Ribble	8.4	Bolton.
" " " "	7.7	South Bury and North Manchester district.
Mid-Lune (Midland and Furness)	7.4	Barrow, Leeds, Bradford.
Leyland and South Preston district ; L. & N.W. Main Line	6.09	Wigan.
Wyresdale and North-West Lancashire ; L. & N.W. Main Line	2.7	South Bolton and Farnworth district.

In addition to supplies of milk by rail, there are conditions possible and favourable to local production around many of the Lancashire towns, both in the purely industrial districts of east Lancashire and in the western residential and seaside resorts. As examples, the towns of Preston, Blackburn, Accrington, Burnley, and Lancaster are practically self-supplied, and in the first-named, there are over two hundred local sellers running in milk daily, whilst there is a considerable business around Blackpool, Lytham, and Fleetwood, though to a less extent than obtains in east Lancashire, where some of the thin, high-lying soils are in an excellent state of fertility, and carry a stock that they could never do under any system of management other than milk selling with its attendant inflow of purchased feeding-stuffs. Rents in excess of what could be paid under ordinary methods of husbandry are commanded in these circumstances; plenty of land that would be, in an ordinary way, worth 15s. to 18s. per acre, being able to pay 2*l.* or 45s. under the specialisation of milk production for local needs. One of these typical east Lancashire milk-selling farms was, when visited this summer, carrying a dairy cow of good style and substance to every three acres; there was no attempt at growing roots, the only winter food produced on the farm being upland hay. If roots were used they were purchased from west Lancashire but were seldom resorted to; the bulky food commonly in use consisting of two feeds per day of wet brewery grains during the winter. Three pounds of cotton cake and three pounds of mixed Indian meal and bran made up the other artificial foods, and as much home-grown hay as each cow cared to eat completed the usual daily feed in winter time. This farm was rented at 42*s.* 6*d.* per acre and had the appearance of high condition; the grass was bright and well grazed, the stock in good order, but the buildings, though clean and in substantial repair, were a little cramped for room. It

was close to the town and most of the customers lay within a mile of the seller's house.

Cheese making forms a branch of the dairy husbandry of Lancashire, though many of the districts where it was made during the past generation in the south of the county have found milk to be a better business proposition. The practice is carried on mostly north of Preston, in the Fylde, whence the cheese usually finds its way to the Preston Cheese Fair, held on the last Tuesday in each month, being bought there for the large towns; again, in the Littledale, Bentham, and Ingleborough neighbourhoods, for which there is a Cheese Fair at Lancaster, likewise monthly, on the second Tuesday. The Lancashire County Council, by their peripatetic instruction, have rendered great service to the Lancashire cheese industry in promoting more exact methods of making, and thus obtaining a more uniform sample throughout with a consequent better demand and price. Prior to the early nineties it was generally believed by those intimately connected with the industry that a handicap to the popularity of Lancashire cheese as an article of diet, could be found in the numerous soft and bad flavoured ones turned out from winter makes, when conditions are less favourable than in grass time. The County Council instruction started at the farm houses by Mr. Joseph Gornall of Cambus, near Garstang, in 1891, was a commencement of that which has done much for the improvement in the quality and uniformity of the cheese on the fellsides and other places where it is made.

Cheshire, with its more completely agricultural and residential surroundings, has long been engaged in dairy husbandry as a chief business and has always been considered to be well-favoured in the way of climate, soil, and situation for the successful prosecution of the industry, largely helped in the past by the excellent natural pastures with which a great deal of the surface is covered, and further stimulated in more modern times by systems of arable cropping designed for the special purpose of milk production for sale. An example of cropping on a Cheshire clay farm (though not one of the heaviest clays) a generation ago, and of which a record is available, may be contrasted with the present day cultivation of the same land, showing a marked difference in method and of increase in productive power.

Old Rotation		Present Rotation	
First year . . .	Oats	First year . . .	Clover (for hay)
Second year . . .	Oats (winter fallowed)	Second year . . .	Clover (Grazed)
Third year . . .	Summer Fallow	Third year . . .	Oats
Fourth year . . .	Wheat	Fourth year . . .	Mangolds and Cabbage
Fifth year . . .	Oats	Fifth year . . .	Wheat (or Oats, if autumn unfavourable)
Land then laid down and grazed for 5 or 6 years.			

Showing that a heavy yielding, succulent green crop has been introduced into the cropping scheme as a suitable milk-producing feed, whilst a year's time, rent and labour is saved by the exclusion of the summer fallow. Still further improvements might be instanced on lighter lands with their greater possibilities for elasticity of treatment and rotation. There has likewise been a similar change in other aspects since the purely cheese-making days, when the calving season was practically limited to the months of March and April and the supply of milk in autumn and winter could never have pretended to meet the demands of the large town populations as catered for now. Land of which it was said that "under good management, a cow will require three statute acres of land" has now nearly doubled that carrying power by improvements in the way of drainage, boning and liming, manuring and the employment of concentrated foods, and is at present maintaining stock up to that standard. From the cattle on ten well-farmed mixed holdings during 1915 the average figure showed that a cow per 1.98 statute acre, and where young stock were counted in as well, a dairy animal of some kind for each 1.76 statute acres, was the allowance of land to the horned live stock.

The main directions in which Cheshire milk finds its way to the consumer is northward, just as surely as the bulk of Lancashire milk tends southward, both working towards the large centres of industry. About one half of the supply reaches the Manchester area, whilst of the remainder about three-fifths goes towards the supply of Liverpool and Wirral neighbourhood, and two-fifths southwards for London, Wolverhampton, and Birmingham.

The Manchester area takes the bulk of supply along the North Staffordshire line from the Congleton and Macclesfield districts of East Cheshire, and also by the L. & N. W.—Crewe to Manchester—running parallel to the last named and taking up from Chelford, Alderley, and Handforth. The Cheshire Lines Railway passes through the country a little further west and is concerned in carrying the supply from the higher mid-Cheshire district, Knutsford, Northwich and reaching down to the Delamere country, a portion of the produce from these districts going also by direct line to Runcorn, Widnes, and St. Helens. Other sources of supply are found in the country lying between Stockport and Buxton, comprising the north-east Cheshire and Derbyshire borders, and that part served by the Midland line running through Rowsley and Marple, from which the milk is carried to Manchester and adjacent towns such as Oldham and Bury. Some supply is also derived from south Cheshire, alongside the Great Western line, passing

through Nantwich, Wrenbury, Whitechurch, and north Shropshire, though a portion of this milk is now deflected towards Liverpool and some is sent to London.

Liverpool with the rapidly extending towns on the other side of the Mersey—Birkenhead, Liscard, Wallasey, and New Brighton—is an important customer for railway-carried milk from Cheshire. The city itself takes milk from seven counties and amounting, according to official figures, to between 17,000 and 18,000 gallons per day, and of this quantity Cheshire contributes upwards of 60 per cent., or between 10,000 and 11,000 gallons. Part of the milk for this main branch of supply is got from the valley of the Dee by the main line passing through Ruabon and Rossett in common with the supply from the Ellesmere district of Shropshire; from the Vale of Chester, including the Tarporley and Calveley districts, whence also a part finds its destination in London; and from the south-western area adjacent to Broxton and Malpas.

Local milk supply is, as might be expected, a strongly developed industry throughout the county. A large business in this way is conducted in the southern part of the mid-Cheshire district in the sending of milk directly by road to the Middlewich Factory. The great bulk of the milk produced for sale in a radius of four miles from this centre is carried there by the farmers; many of them, with moderate quantities to convey, share the cartage by mutual arrangement between one or two neighbours and thus reduce the constant daily absence and waste of power that might otherwise be felt. On the eastern side of this area of supply, adjoining that of the North Staffordshire line supply to Manchester, milk is being sent direct by road in considerable quantity a distance of seven to eight miles. Then as in other places, important local supplies are a feature of the farming round Birkenhead, Warrington, Liverpool, Wallasey, Hoylake, Crewe, and other important centres, and also in and around south Manchester, here joining up with some of the land where that other important branch—growth of clover hay, straw, potatoes, and roots—is made the main business of the farming. The mid-Cheshire area has a large residential population in the country towns of Knutsford, Altrincham, Bowdon, Hale, and Ashton-on-Mersey, and also—rather further afield—Alderley and Wilmslow, totalling some 68,000 persons altogether, and with a local milk supply adequate to their needs. The Stockport neighbourhood combines both industrial and residential features; as to the former, the conditions of local supply round the town of Stockport itself, with Hyde, Stalybridge, Ashton, and Dukinfield, with their total populations of 163,000, very much resemble those of the east Lancashire towns, as already

described, except that the amount of land put to the plough for growing a crop of corn or roots is not so uncommon. The residential places of Cheadle, Cheadle Hulme, Bramhall, Hazel Grove, Disley, and Marple, all on the Stockport side, with a combined population of 34,000, from their situation in a more low-lying and fertile country give a more generally arable type of agriculture, more like the plain of Cheshire, as the ground-work of cow feeding and resultant output of milk; the amount of permanent pasture is smaller than in some parts of Cheshire, and a succession of home-grown foods are available to assist the dietary of the animals without the fullest resort to purchased material, which characterises most milk-selling farms on the outskirts of the real industrial centres.

The great and outstanding importance of Cheshire cheese as an article of diet, has at all times been a household word, and its special value at the present moment as food for the British army warrants its mention in an article dealing with the dairy husbandry of the county from which it takes its name. The headquarters of the cheese district now lies on those stiffer clays which produce a fine growth of grass in the summer season, but are too flat and retentive in character to bear much, or any, stock during an ordinary winter. Though cheese can be, and is, made in other parts, it is in the districts of Nantwich, Wrenbury, Burleydam, Cholmondeley, Beeston, Tattenhall, and the Vale of Chester that the largest amount of superior Cheshire is produced. The cheese is made under more favourable conditions than prevails in the case of Lancashire; the dairy, cheese-room and other appurtenances are usually more complete and adequate, as might be expected when the design of the whole homestead has always favoured a construction to suit an old-standing, permanent, and specialised industry such as the making of Cheshire cheese, with the collateral work of pig fattening on the whey and other waste products. As has been the case in Lancashire, cheesemaking has consistently benefited by systematic instruction grafted on to individual skill and local experience, the peripatetic and centralised classes of the former having likewise been followed in Cheshire, especially in the establishment of the Dairy Institute at Worleston, near Nantwich, which, from a small beginning some twenty-five years ago has provided valuable instruction for a large number of those skilful dairymids on which Cheshire has reason to look with pride, and on whom the bulk of the cheesemaking duties fall.

Dairy farming in both counties has been assisted by efficient organisations for developing the business and for safeguarding the interests of those engaged in it. Lancashire has the Lancashire Farmers' Association with its headquarters at Preston.

Founded eighteen years ago at the little village of Brock, situated on the main line about eight miles north of Preston, with six members, and soon beginning to increase its sphere of usefulness, the membership had risen to 1,100 ten years ago and can at the present time show treble that number on the roll of its forty-three branches, which extend all over Lancashire from as far north as Kirkby Lonsdale, to Warrington on the south and in the other directions, westward from Banks and eastward to Nelson, besides reaching into Westmoreland and Yorkshire. It has a separate Milk Committee which deals with all points affecting members' interests in questions of milk supply and price, besides giving help and advice on matters connected with particular difficulties.

Cheshire has a special association for a similar purpose in the Cheshire Milk Producers' Association. Its inception was in the same year as that of the sister society in Lancashire, but it had a rather more flattering start in the number of members, three hundred being on the register at the first annual meeting. It, too, has had a well-marked growth in strength and has now more than trebled the original figure twice over, with the present list of 1,900 names in fourteen branches, four of which extend operations into adjoining counties, and with three affiliated societies. The Association has for its broader aims the promotion and advancement of dairy farmers' interests generally, including the application of co-operative principles to the sale of dairy products; the bringing into closer contact the consumer and producer; the diffusion of information as to the value of milk as a food and the general measures necessary to ensure regularity and purity of supply; besides the more immediate ones of regulating prices, railway rates, station accommodation and also the valuable work of establishing a well-organised local system for examination of milk and the prevention of its adulteration. The Association maintains a Manchester agency from which the Liverpool business of members is likewise supervised and kept in touch with; the agent makes the usual enquiries as to financial standing of buyers, inspects his district generally, looking up cans which have gone astray or are, for any reason, not being returned regularly, and he has been able to trace many milk-churns which otherwise were hopelessly lost; and, lastly, by selling milk for members on a moderate scale of charges, varying with the quantity and fixed by a special Committee.

Both the Lancashire and Cheshire Associations have further amalgamated along with Yorkshire and Westmoreland in forming the Northern Counties Milk Producers' Association. One of the most important advantages of this combination is that farmers from different counties who are sharing in supplying

the same area, will be aware of the selling prices recommended by their representatives and will have other information on this head than that frequently obtained from milk dealers who have a natural bias on the side of cheapness, and back it up by assertions of the lower rates prevailing in the next county.

In the city of Liverpool a specially interesting feature both from an agricultural and a municipal point of view is presented by the cows kept within its boundaries. City dairies are not infrequently found tenanted by good cows, but those of Liverpool enjoy a deserved reputation for the exceptionally fine type of big frame and high quality which occupy the commodious buildings in which the Liverpool and District Cow-Keepers' Association carries on its work. Special attention has always been given to questions of health, the cows being observed with due care and cases of indisposition reported to the Chief Veterinary Surgeon. The quality of the dairy cattle is encouraged by the holding of a show at Christmas, which has had to be temporarily given up owing to the war. Most of the cows are of the highest class of "nonpedigree" Dairy Shorthorn, though many of them would be eligible for registration had their antecedents been kept entered up. When housed the animals are fed with a view to being fat for the butcher as soon as they have finished their lactation. The drawback to the system is the oft-repeated regret that so many of the finest cows in the British Isles are compelled to be lost to the breeding world and to be slaughtered in the prime of life. Besides the large amount of milk that comes into Liverpool from outside there are some five thousand of these cows within the city borders and, for any one interested in dairy cattle, there is no more striking sight than to step from a busy Liverpool street into a perfectly appointed cow-house, and find himself amongst a collection of cows such as is seldom seen.

Movements for the improvement of Dairy Stock under the Government schemes have been taken up in the North Western Province, for which purpose Lancashire and Cheshire have been grouped together. The Cheshire Milk Recording Society has been in operation for one and a half years and has now over a thousand cows under record with a promise of steady increase in membership in spite of war conditions. Lancashire has begun with a similar Society at Poulton. The excellent method of cattle breeding practised in Lancashire does not prevent farmers in this county from taking still further steps for the improvement of their herds. They have now twenty-six bulls located and serving, with seventeen further grants approved and filling. Cheshire, which stands very much more in need of good bulls, has unfortunately only formed sixteen bull societies and has one further grant approved.

The writer wishes to record his acknowledgments to Mr. Holborn, Secretary of the Lancashire Farmers' Association; to Mr. Sadler, Secretary of the Cheshire Milk Producers' Association; and to Mr. Thomas Backhouse, Secretary of the Liverpool and District Cow-keepers' Association, for information kindly given.

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SOME MINOR FARM CROPS. III.

I.—BULB GROWING IN SOUTH LINCOLNSHIRE.

BULBS for forcing or for the ordinary market for gardening purposes are now grown as a farm crop in many parts of the United Kingdom. The Channel Islands, the Isle of Wight, the Scilly Isles, and parts of Cornwall are known as bulb producers by all lovers of flowers; but comparatively few people know that they are now grown in many parts of England, and among other districts that of South Lincolnshire, especially in the neighbourhood of Spalding, is the most important. Bulbs of several descriptions are also grown near Langport and Bath, Somerset; Lowdham, Nottingham; Wisbech, Cambs; in Wales in the Isle of Anglesey; in some districts in the South of Scotland; and also in Ireland, in Sligo, Co. Dublin, and Cork; in addition to small isolated plots which are grown by seed merchants or nurserymen.

In most of the districts in the second group the bulbs were at one time grown primarily for the marketing of the bulbs themselves to the florist forcers or to gardeners, but the development of the cut-flower market has turned most of the crops to dual purposes, and they are now grown both for flowers and bulbs.

The history of the development of the industry in South Lincolnshire illustrates to some extent its development in parts of this country not situated on the South Coast. Just over forty years ago some small gardeners near Spalding began collecting and cultivating the common varieties of bulbs they found in their gardens for the purpose of producing bulbs for sale.¹ Amongst these were the old double daffodils, crocuses,

¹ In 1877 it was stated that "nearly the whole of the bulb trade is carried on by Dutch florists, if we except our Lincolnshire snowdrop growers." (F. W. Burbidge, "Horticulture," p. 175, *Stanford's British Industries Series*, 1877.)

autumn crocuses, fritillaries, snowdrops, common red hot poker (*Kniphofia*), and various kinds of liliun, especially *L. chalcedonicum*. The bulbs produced were sold to the London seedsmen, Barr, Veitch, and others. About this time a London draper, who was interested in bulb culture, used to spend his holidays at Spalding, where he collected bulbs whenever he could get them. Then having about 1,000*l.* capital to spare he set out to purchase 1*l.* lots of bulbs of as many varieties as he could find in the neighbourhood, to start a bulb nursery at Tottenham. The net result of this venture in the commercial cultivation of English bulbs was small, because the small quantities of the many varieties found did not yield large marketable quantities within reasonable time. But the experimenter persevered with his venture, and, what was important for the Spalding industry, took a youth who had helped with the collection of bulbs in that neighbourhood into the Tottenham nurseries, where he gained some knowledge of horticulture, and particularly learned the addresses of French, German, and Dutch producers of bulbs for market.

This youth returned to Spalding forty-one years ago and immediately set to work, with others, producing bulbs on a small commercial scale. In company with another and older grower he used to make journeys to Covent Garden to sell his bulbs, and out of these visits developed the sale of cut flowers. On visits to Covent Garden these growers noticed French and Channel Island daffodils being sold there, and immediately asked why they should not reap two harvests from their bulbs. One set to work to send small quantities of daffodils to London, the other was restrained by his father, who declared that cutting the flowers injured all varieties of bulbs. This opinion was held by some of the local growers for many years. But, as the erstwhile youth recalls with some satisfaction, his father

The Dutch trade at this time was regarded as nearly impregnable. F. W. Burbidge wrote: "Holland has a special industry, and a most remunerative one, in her trade in bulbs, which are chiefly cultivated near Haarlem and Lisse, and which owe their superiority as much to the suitable texture and position of the soil—a calcareous sand resting on peat—as to the lavish use of manure, and the most unremitting attention on the part of cultivators; many of the latter are small proprietors, and they grow the bulbs on their own land for the larger houses, who carry on the export trade." ("Horticulture," p. 236.) The supposed superiority of the sand and peat soil of Holland for bulb growing has been an article of faith among merchants and florists from that time almost to the present, but as English growers have learned their business and developed their methods it is rapidly disappearing. Also in 1875 Germany was developing some trade in bulbs with England; France was sending some bulbs and flowers, especially gladioli; Italy also was developing the bulb and flower trade, especially of narcissi. The bulb and flower industry started in England about this date, and has followed the general line of the developments in South Lincolnshire, with some deviations due to local conditions.

was often away from home, and some flowers found their way to market. Where the receipts went is not now ascertainable. Soon after the early consignments of flowers to London, the young grower who had been trained at Tottenham introduced some of the new varieties of bulbs from Holland and Germany, no longer depending on the old English stocks, and the marketing of both bulbs and flowers began to increase. So far as Spalding is concerned this was the origin of the present industry, about thirty-five years ago.

For some years the extension of the cultivation of bulbs was very slow, and the produce of the bulbs themselves was regarded as more important than the harvest of flowers. During the last fifteen years, however, the industry has been rapidly extending. This has been due to two causes; the demand for bulbs for domestic or commercial forcing, and the growing demand for cut flowers.

It would be nearly impossible to estimate the area at present under bulbs, but in South Lincolnshire there would be some fifty growers. A few have as much as 100 acres under various kinds of bulbs, while numbers have small plots of from one to ten acres, and numerous small holders have smaller plots.

HOLDINGS AND CROPS.

The Holland division of Lincolnshire, in which most of the bulbs are grown, is remarkable for the large proportion of small farms it contains. The proportion of farms under fifty acres in extent is very much greater than the average for England and Wales, while the proportion of farms over fifty acres is considerably less than the average. Also the proportion of farms owned by occupiers of all classes is considerably higher than the average for England and Wales.

A good proportion of the smaller bulb growers, and some of the larger ones, are occupying owners. Those who are not rent land on fairly long leases. This is necessitated by the nature of the industry.

In the neighbourhood of Spalding the enclosures are very small, many of them not exceeding four or five acres. Small orchards or large gardens attached to cottages are numerous, and the production of vegetables and fruit for market in either large or small quantities is very common; and labourers' cottages are remarkable for their wealth of flowers, even in the late autumn.

The most striking fact about the Holland division of Lincolnshire is that practically no land is devoted to woods; the *Agricultural Returns* state that less than seventy out of a total of over a quarter million acres are given over to coppices

and plantations. Another important fact is that less than one-fourth of the land is devoted to permanent pasture, the rest being under cultivation for arable crops.¹ Amongst arable crops potatoes cover the largest acreage. This is most important to the bulb industry, because one of the essentials of bulb culture is that they shall be preceded by a crop which is heavily manured and which leaves the land in good tilth. Both in Cornwall and the Holland division daffodils are usually planted after potatoes or one of the cabbage crops. The crops of the Holland county division are very diversified, and fairly large areas are planted with vegetables and fruits.

The beginnings of this variegated system of farming were noted by Arthur Young as far back as the end of the eighteenth century when he described the "uncommon crops" grown in Lincolnshire as potatoes, woad, flax, hemp, lucerne, sainfoin, onions, parsley and carrots. The peculiar development of the farming of the Holland division, however, has occurred during the last thirty years in response to the demand for the smaller necessities and the commoner luxuries of industrial life, and perhaps the most important factor in the establishment of the bulb industry near Spalding was that the farmers were conversant with the cultivation of miscellaneous crops. A considerable acreage is planted with peonies for production of cut-flowers, and a recent development is the cultivation of pyrethrums for the same purpose. The latter is rapidly extending. The bulbs grown include narcissii of all types, tulips, lilies of the valley, and some others in small quantities. Snowdrops are grown to some extent, particularly by small growers. Hyacinths are not grown, as they need a soil in which available lime is plentiful. Squills, or wild hyacinths, however, are grown in the neighbourhood. A considerable quantity of irises used to be grown near Spalding, largely for the flowers, but as the demand for these has declined the irises have mostly disappeared.

Two members of the order Ranunculaceæ are also grown, Christmas and Lenten roses (*Helleborus*), and winter aconite (*Eranthis*). The chief part of the home supply of gladioli is grown in Somersetshire. Crocuses used to be grown both in South Lincoln and near Saffron Walden, Essex, but most of them have now disappeared. Small quantities are still grown near Wisbech.

SOIL AND CULTIVATION.

The land in the neighbourhood of Spalding is nearly all of a silty character; but almost any good land will grow daffodils

¹ It is particularly worthy of notice at this time that there is a tendency to plough up some of this small proportion of grass land. The head of stock kept is not diminished in the same proportion as the arable is increased.

and tulips, which are the most common bulbs produced on farms. In the Penzance district of Cornwall daffodils are grown on soil lying on limestone, on granite and on clay. In South Lincolnshire the character of the silt varies a good deal, tending in places toward sand, in others toward clay. Arthur Young described the soil of the Holland division as that "rich tract." "On entering the county from Wisbech to Long Sutton, everyone must be struck with the richness of the soil. It is one of the finest tracts I have seen—a brown dark loam of admirable texture. The district continues with some variation of peat near Spalding, quite to the sea at Freestone, beyond Boston." (*Survey of Lincolnshire*, p. 7). But the chief requisite in bulb culture is that the soil shall be well drained so that it will be easily workable and will make a good tilth. It is particularly necessary that not the smallest quantity of water shall stand on the surface of the soil. The land should also be clean.

Daffodils can be grown on the same land year after year, and they are often allowed to remain down for three years. Tulips, however, should be moved every year. Growers state that the land gets "tulip sick"; but it is more common for the land to become infested with a fungus which attacks the foliage of the plant and destroys it. This is known by the growers "tulip fire," because of the brown dust which shakes off the foliage after it has succumbed to an attack. The most practical remedy for this disease is to pick off the affected foliage, going through the plants about every two weeks during the period of attack, and then to remove the tulips altogether and plant with another crop next season. Experienced growers state that the fungus will not survive in land under another crop, and that if no contact is established with affected plants elsewhere the ground may be freed from the pest.

Where daffodils are not planted on land from which tulips have been previously lifted they are taken after potatoes. Indeed this is the most frequent practice. It is not usual to apply manure to daffodil land, the practice being to manure heavily for the previous crop. When these bulbs are planted after potatoes the ground is ploughed to a depth of eight or nine inches directly after the potatoes are lifted. Thorough cultivation and harrowing follows, then if the ground is hollow it is rolled to make it firm on top for the planting. This is done by ploughing to the depth of between four and five inches and from eight to nine inches wide. One horse will do the work, with a plough built so that the draft may be set to allow it to walk on the unploughed land instead of in the furrow, and thus the possibility of damaging the bulbs by treading is avoided. This plough is fitted with a small share,

fitted to the stay inside the mouldboard, which removes the bottom corner of the furrow and makes a small groove in which the bulbs are laid. The bulbs are laid by women and girls. During planting a man and horse will be accompanied by from ten to twelve women and girls; some of the latter fetch the bulbs from the sacks and shake them into the furrow from peck baskets, and they are followed by the others who place them in position. It sometimes happens that only one furrow can be ploughed at a time, the plough returning empty, when the number of women given is sufficient to keep the plough moving, but when the plough is at work both ways the man often has to wait for the women to place the bulbs.

The distance between the bulbs in the row very largely depends upon their size. In the case of daffodils, which need only one year's growth to be fit for the forcer, the distance will be nearly three inches from centre to centre. In the case of bulbs needing two year's growth they will be laid closer together, and bulbs needing three year's growth will be placed practically in a continuous row, in contact with each other. Tulips are given a little more space, according to size.

When daffodils needing one year's growth to be of the size demanded by forcers are planted they are harrowed once during the winter, if weather permits, to keep down weeds. If the ground is very uneven after planting they may be immediately harrowed to level the soil and prevent water gathering in the holes. Then, as soon as the growth shows in spring they will be hoed, and hoeings will take place during the season as often as necessary, or as labour is available. Sometimes hand-weeding is resorted to to remove weeds from the rows. Bulbs planted in August and September should yield flowers in March and April, and as many as can be picked will be sent to market. As soon as the foliage has died down, lifting begins, usually early in July.

When bulbs needing two or three years' growth are planted they are frequently left down till the larger bulbs will be fit for market when lifted. In this case cultivation is the same, except that after the foliage has died the ground will be lightly skimmed to the depth of from one to two inches, according to the depth of the crowns. This may be done once or twice as may be necessary, or after the first skimming a very light barrow, known as a "chicken harrow," may be used to keep down weeds.

Tulips are, or should be, lifted every year. They are not so prolific in offshoots as daffodils, and it pays to take off the bulblets and develop them by themselves. Besides this, tulips do better in fresh ground, provided it is in good condition.

MANURING.

Daffodils nearly ready for market, planted for one year, are not generally manured. In special cases they may be supplied with soot during the early winter, or in very early spring with guano, to "feed them as fat as possible"; that is, to induce a full, plump appearance. When smaller bulbs are planted soot is often applied during the second and third winters at the rate of from 5 to 10 cwt. per acre, with an average of about 8 cwt., or guano may be applied in the spring.

For tulips special manuring is practised. The daffodil bulb is naturally more slender and of rougher skin than the tulip, and no amount of trouble could bring it to the same plump and glossy appearance, but a very large part of the value of tulips is determined by plumpness and gloss. Thus special feeding is necessary during the last year of growth. The land before planting should be as rich as possible. Where it has not been sufficiently manured for the previous crop a well-rotted compost is applied. In many cases near Spalding this compost is largely composed of night-soil and street cleanings of the town. This is a very cheap manure. The Spalding U.D.C. sells the night-soil at the flat rate of thirty shillings per month, including the cost of carting to the outskirts of the town. The cost averages under sixpence a load. Quite frequently fairly heavy dressings of nitrate of soda, sulphate of ammonia and muriate of potash are given during the spring. It is stated that the proper use of the last named is most important in "feeding" tulips.

Large quantities of tulips and daffodils are bought in Lincolnshire by Dutch growers to be specially "fed" in Holland. They are taken there, where they are planted in sandy soil, which has been removed to the depth of about six inches, and under which well-rotted cow manure has been laid. During spring the waterways are arranged so that the level of the water is about six inches lower than the surface of the soil, thus the bulbs are continually fed on rich manure and water, ensuring plumpness, while the sandy soil enables them to lift the bulbs with a clean and bright appearance. English bulbs are much appreciated for this purpose, as the period of growth between the small offset and the fully grown bulb is much longer than in the case of bulbs grown more quickly under forced conditions, and they have more "rings" or overlapping leaves, often twice as many as the Dutch bulbs. Thus, when fully fed, they are larger and of better quality.

In general cultivation, however, the most important part of the manure is applied to the preceding crop. For some market garden crops in small quantities as much as from thirty to one

hundred loads of dung or compost is applied per acre. From thirty to forty is fairly common for some of the varieties of brassica. The most common manuring is that for potatoes, which is somewhat as follows :—From ten to fifteen loads of farmyard manure, and about eight to ten hundredweights of artificials, including either bone manure or superphosphate and sulphate of ammonia. Raw dung is rarely applied to bulbs as it is held to be detrimental to them ; some growers, however, apply it to tulips at the rate of even eighty tons per acre.

SEED AND PLANTING.

When bulbs are lifted from the ground they are of all sizes, from the offset of that year to the fully grown bulb. They are then separated into several classes : (1) heads, to be sold to the forcers or to the trade ; (2) seconds, which may be planted again to become heads, sold to the Dutch growers for development, or sometimes sold for the cheaper trade ; (3) planters ; (4) chips. In special cases, when the stock of a variety is low, the "heads" may be planted again as "breeders," and given plenty of room to induce them to throw off offsets. The seconds may be planted for one year to develop into "heads." The third size may be planted and left down two or three years, and as the general stock is high or low the chips may be planted or thrown away to rot. The general or special conditions of the trade have much to do with the quantity or quality which is planted.

It is often computed that five tons of daffodil bulbs, or thereabouts, are required to plant an acre, but from three to four tons would be a better estimate. The quantity varies considerably, as the weight of the bulbs planted varies between 10 lb. and 30 lb. per 1,000, although in the case of smaller bulbs a larger number is used. In the case of a well-known variety of tulip, "Clara Butt," from 200,000 to 250,000 bulbs are planted. At 30 lb. per 1,000, the larger number would amount to about 3 tons 7 cwt. Of some varieties and sizes, as many as 600,000 are planted. The purpose for which the bulbs are to be used largely determines the quantity to be planted. The best time for planting is during August and September, but it may continue into the middle of October. Tulips are planted from the middle of September to the middle of October, or somewhat later. Small cultivators plant with the spade, digging all the ground if it is firm, otherwise trenching in after the manner of potatoes. At regular intervals a row is missed to form a path. Large farmers plant with a plough as before described, and in cases where flowers are to be picked, provision is made for paths.

It would be impossible to name all the varieties grown, but nearly all the types of the narcissus family are represented. Poeticus, Poetaz, Barrii, Leedsii, Trumpet Daffodils, Jonquils, and Polianthes may all be seen. Few of the early Channel Island varieties are grown, the most common varieties being, "Ornatus," "Golden Spur," "Sir Watkin," "Obvallaris," "Emperor," "Empress," and "Victoria." Also many varieties of tulips, including those of the Cottage and Darwin types, are grown. To describe the cultivation and varieties of lilies of the valley and some other bulbs would involve too much detail for the present purpose.

When flowers are the special product desired, varieties are planted to succeed each other. The following is, approximately, the order of flowering :—

(1)	Grand Soleil D'or	}	.	Polyanthus
	Grand Monarque			
	Henry Irving	}	.	Daffodils.
	Obvallaris			
(2)	Golden Spur	.	.	Trumpet Daffodil.
	Gloriosus	.	.	Polyanthus.
(3)	Sir Watkin	.	.	Incomparabilis.
	Empress	.	.	Trumpet Bi-colour
(4)	Emperor	.	.	Trumpet Daffodil.
	Ornatus	.	.	Poeticus.
	Conspicuous	.	.	Barrii.
	Poeticus	.	.	Pheasant Eye.

HARVESTING.

Small cultivators lift with the fork, large cultivators plough out their bulbs, except in the case of small quantities of choice varieties. When the plough is used the depth at which the bulbs were planted and the width of the rows is known and the plough is gauged so that the share runs just under the roots and the coulter cuts close to the inside of the row. Thus when the furrow is turned the bulbs are seen at the peak. They are then picked up by women in the same way as potatoes, and placed in boxes to dry. These boxes, or "trays" as they are called, are lightly built, having sides with interstices to admit the passage of air; the dimensions are 32 in. by 21 in., with 3 in. sides and 6 in. ends, or uprights which project 3 in. above the sides. The purpose of the high ends is to allow the boxes to be stacked on top of each other, leaving a hollow stack.

The bulbs are left in the stacked trays till the dirt and loose skin can be removed easily, leaving them with a clean, tidy appearance. Care must be taken, however, that they do not

¹ Few of these are now grown as the climate has proved to be too cold for them, and they will probably disappear entirely.

get too dry. Then they are placed in heaps on a table where the "heads," and, if they, too, are intended for sale, the "seconds," are picked out by women and girls. Afterwards the smaller bulbs are graded in a machine consisting of a series of wooden trays with holes of increasing dimensions. This machine is of Dutch manufacture.

The weight of bulbs as graded varies within wide limits. "Sir Watkin" may weigh up to 200 lb. per 1,000, but 130 lb. is a good forcing bulb; "Golden Spur" up to 100 lb., 65 lb. per 1,000 being a good forcing bulb; the tulip, "Clara Butt," varies between 30 and 50 lb. per 1,000, 33 lb. being a good forcing sample. The common range for the various grades is between 10 and 60 lb. per 1,000. The common increase in gross weight per acre would be about 70 to 80 per cent. for the first year, 200 to 225 per cent. the second year, and some bulbs left down for three years or more may treble in weight.

COMMERCIAL ASPECTS.

It is confidently asserted by English growers, and admitted by most merchants and some forcers, that English bulbs are superior to those of Dutch origin. On the average, home grown bulbs contain 25 per cent. less water than their Dutch competitors. They are somewhat smaller and harder in consequence, but contain more overlapping leaves or "rings" and contain more sustenance for flowers. Forcers, however, particularly amateurs, are slow to recognise this. The amateur especially demands a plump, good looking article. Hence English bulbs fetch somewhat lower prices than the Dutch varieties. And this year prices have been disturbed by the general conditions of trade, besides being subject to undue competition on account of the German market being practically closed to the Dutch growers.

In the case of crowns of lilies of the valley, however, the cessation of the supply of "Berlin crowns" from Germany has caused a keen demand for home grown supplies. Crowns are grown almost entirely for the forcing trade. They are lifted as soon as they begin to show signs of growth in spring and placed in cold storage at 30° F. during the summer months. When they are needed for forcing they are taken out of storage, placed in a cool house for a few days, and then placed in heat, when flowers are produced in a few weeks. The production of forcing crowns has been a highly specialised industry which English bulb growers have only recently entered, most of the crowns previously being imported from the continent.

Price of bulbs.—The price of bulbs varies according to the variety and the weight of the sample. It may be anywhere between 5s. and 10l. per 1,000. The following prices of common varieties may be given :—

Prices of *Daffodil and Narcissus Bulbs.*

	1908			1912			1915		
	Forcing quality, per 1,000	All sizes as lifted, per ton	£	Forcing quality, per 1,000	All sizes as lifted, per ton	£	Forcing quality, per 1,000	All sizes as lifted, per ton	£
Golden Spur	30 to 35	35 to 40	35 to 40	35 to 40	30 to 40	30 to 40	30 to 45	35 to 40	35 to 40
Sir Watkin	25 " 30	25 " 30	30 " 35	30 " 35	20 " 25	25 " 40	25 " 40	22 " 22/10	22 " 22/10
Emperor	25 " 30	20 " 25	30 " 35	30 " 35	15 " 20	25 " 40	25 " 40	14 " 15	14 " 15
Bicolor Hoefveldi	15 " 25	10 " 15	20 " 25	20 " 25	12 " 15	16 " 20	16 " 20	11 " 14	11 " 14
Bicolor Empress	30 " 35	12 " 15	30 " 35	30 " 35	15 " 20	30 " 45	30 " 45	25 " —	25 " —
Barril Conspicuous	12 " 16	6 " 8	12 " 16	12 " 16	6 " 8	12/6 " 17/6	12/6 " 17/6	6 " 9	6 " 9
Ornatus	10 " 15	20 " 25	10 " 15	10 " 15	20 " 25	8/6 " 16/6	8/6 " 16/6	16 " 20	16 " 20
Bicolor Grandee	12 " 15	6 " 8	12 " 15	12 " 15	6 " 8	12 " 16	12 " 16	8 " —	8 " —
Pheasant Eye	5 " 7/6	3 " 5	5 " 7/6	5 " 7/6	4 " 6	5 " 8	5 " 8	5 " 6	5 " 6
Double White (Poeticus)	10 " 12/6	12/10 " 15	10 " 12/6	10 " 12/6	10 " 12	8 " 12	8 " 12	10 " 12	10 " 12

Prices of varying sizes of some varieties.

	"Sir Watkin"		"Golden Spur"	
	Approximate weight per 1,000	Price	Approximate weight per 1,000	Price
Extra Large	112 lbs.	40s.	100 lbs.	45s.
Forcing Heads	90 "	35s.	65 "	30s.
Seconds	60 "	16s. 8d.	40 "	18s.
Thirds	30 "	8s. 4d.	30 "	8s. 6d.

Wholesale Prices of Tulips, 1915.

	Forcing per 1,000		Forcing per 1,000
<i>Single Early—</i>	<i>s.</i>	<i>Parrot—</i>	<i>s.</i>
Duc Van Thol	20 to 35	Cramoisie Brilliant . .	25
Primrose Queen	30	Mark Graff van Baden .	30
Crimson King	18	<i>Single Late—</i>	
Belle Alliance	28	Bouton d'Or	25
Keiserkroon	35	Gesneriana Rosea . . .	20
Thomas Moore	25	Golden Crown	16
Mon Trésor	32	Picotée (Maiden's Blush)	22
La Reine	20	<i>Darwin—</i>	
<i>Double—</i>		Clara Butt	30
Graaf van Leicester . .	20	Maiden's Blush	30
Duke of York	17	Dorothy	50
Toreador	80	Phyllis	35
		White Queen	45

Selling. Practically all of the bulbs are sold to the wholesale merchants. Many of them go into the English trade for forcing, or to the retailers. Some are exported by English firms, but most of the exporting is done by Dutch dealers who visit Spalding to buy and sell stock.¹ Some of the English bulbs bought by the Dutch are sent to Holland to be grown and "fed" as before described, others are exported to other countries, especially America.² A large quantity of foreign

¹ We export "bulbs and flower roots, the produce of the United Kingdom" to the value of about £80,000 each year. The imports into the United Kingdom have been as follows:—

	IMPORTS OF BULBS AND FLOWER ROOTS.	
	Foreign Countries.	British Possessions.
	£	£
1910	491,576	16,024
1911	626,484	25,636
1912	524,837	31,784
1913	588,972	24,605
1914	414,017	14,816
		Total.
		£
		512,540
		652,120
		556,621
		613,577
		428,833

² America is now the great expanding market for bulbs. In five recent years the value of imports nearly doubled, the figures being as follows:—

	Value of imports of bulbs, bulbous roots or corms cultivated for their flowers or foliage *	Approximate equivalent in pounds sterling
	\$	£
1909	954,399	190,879
1910	1,242,773	248,552
1911	1,642,274	328,454
1912	1,723,354	344,670
1913	1,823,307	364,661

* United States Department of Agriculture Yearbooks.

bulbs, especially Dutch, are sold every autumn in auction rooms in Covent Garden and Cheapside, but practically no English bulbs are sold in this way. Some of the smaller growers sell their bulbs, and also occasionally small lots of their flowers, to the larger growers, and in this way small lots are gathered into wholesale quantities. It also sometimes happens that the small grower has pledged his bulbs to one of the merchant growers in the neighbourhood, or his flowers to a commission agent, in which case he is under considerable disability in disposing of his produce to the best advantage. Unlike the Dutch growers the English bulb producers have no protective or educational organisation. "The Dutch bulb trade has always been well organised. The general federation, which numbers nearly 3,000 members, has been in existence for half a century and has thirty-seven local groups. It publishes a paper twice a week, holds weekly exchanges and has a powerful trade council. In addition to this general federation there is a society for the bulb growers who export and another for those who do not."¹

Flowers.—The sale of flowers has now become an important source of returns in the districts in which bulbs used to be grown primarily for the increase of stock. It is estimated that about 800 tons of daffodils are sent by rail from Spalding alone during the chief season for outdoor flowers. During the heaviest period in March and April about 120 tons are shipped every week, ten or twelve "through passenger vans" being loaded each evening for the various large centres, including London, Manchester, Liverpool, Birmingham, Leeds, Bradford, Nottingham, Derby, Sheffield, Glasgow and Edinburgh. At these centres the flowers are sold through the commission agents.

Daffodil picking starts early in March and continues during April as long as the crop lasts or the market is profitable. In the case of some of the early pickings the buds may be

This rise occurred in spite of the attempt to foster home production made by Congress in the Puget Sound region to supply the bulbs for the "Congressional distribution." At the present time Japan is a competitor in the American market, but the Japanese bulbs are grown on farms, and it would seem there is an opening in America for trade for our own growers and exporters.

It may not be out of place here to state the chief facts about the Dutch bulb trade. The export nearly trebled during the decade 1901-10. "We are still the best customer for Dutch bulbs, taking 40 per cent. of the exports; 25 per cent. goes to Germany and Austria; the next largest buyer is the United States, which takes about 18 per cent. Although there are only about 200 bulb exporting firms in Holland, there are more than 2,500 bulb growers, and quite 4,000 people must be employed in the industry altogether. The smaller growers sell their bulbs to the exporting firms." (*Home Countries, "A Free Farmer in a Free State,"* page 88.)

¹ *Home Countries, op. cit.*

gathered green, placed in water in a warm shed for a night or longer. The flowers are tied in bunches of one dozen and packed in boxes. These boxes are now becoming an expensive item in the equipment. Before the war the non-returnable box could be bought for $4\frac{1}{2}d.$, and now costs $6d.$; returnable boxes used to cost from $7\frac{1}{2}d.$ to $9d.$ and now cost from $1s. 2d.$ to $1s. 6d.$ It is estimated that transportation and commission take 40 per cent. of the gross returns. The agent's commission is from 5 to $7\frac{1}{2}$ per cent. when flowers are packed in grower's boxes, or about 10 per cent. in the agent's boxes. The yield of flowers generally ranges between 200,000 and 300,000 per acre, with an average of 250,000, but some prolific varieties like *Ornatus* yield as many as 700,000. A good deal of foliage is also marketed, especially from the forcing boxes.

Some criticism is made of the Lincolnshire system of tying and packing. In the Channel Islands the practice is to hold the flowers so that the face of them is before the buncher, but in Lincolnshire most bunchers hold the flowers so that they see only the backs. The latter method allows more speedy tying, as the flowers are more easily held, but the buncher cannot see the flowers, whereas by the other method of holding defective flowers can be seen and discarded. It is also stated that Lincolnshire growers are sometimes careless in boxing the flowers, especially the trumpet varieties, thus damaging the blooms. This is largely a problem of availability and cost of labour, but there can be no doubt that in the production of luxuries like cut flowers it pays to market the very best quality.

Forcing.—Forcing is now an integral part of the business of almost every grower in South Lincolnshire.¹ A large amount of land is covered with glass in the neighbourhood of Spalding and both large and small growers possess houses. The bulbs are placed in boxes during August, and left in the open, often covered with litter to keep down weeds, till November or December. They are then placed in a cold house and left for a few days before heat is applied. From a month to six weeks after being placed in the house the flowers begin to appear. The first pickings consist of buds which are placed in water

¹ About 1875 the forcing of bulbs was almost solely confined to the outskirts of London, where it was practised by professional florists. At this time the florist who used 200,000 bulbs per year was regarded as an exceptionally large forcer. One of the great authorities on British horticulture writing at that time of a nursery near Tottenham says: "Bulbs also occupy a very important position in this establishment, especially hyacinths and tulips. Of the former between 60,000 and 70,000 are forced yearly Another market grower . . . of Acton, imports and grows yearly as many as 60,000 tulip bulbs" (*Horticulture*, page 135). This number of bulbs is now exceeded by many comparatively small forcers in South Lincolnshire.

for two or three days to open. Later cuttings are kept in water for a shorter time, till the last cuttings may be nearly ready for market when cut. The dimensions of the forcing boxes are 32 in. by 18 in. by 4 in. The bulbs are placed close together in the boxes. The houses may be filled either two or three times, according to the supply of bulbs boxed in the autumn. By April the flowers will be finished, and the houses are filled with tomatoes. A house 72 ft. long by 24 ft. wide holds approximately 250 boxes, and at 250 flowers per box the yield for the house would be nearly 200,000 during the season. The following table shows the prices of daffodils and tulips at Covent Garden during the forcing and outdoor seasons of 1915

WEEKLY PRICES OF FLOWERS AT COVENT GARDEN.

(The quotations on pp. 125-6 do not represent prices on any particular day, but the general average for the week ending with the date given. The actual price depends upon the quality of the samples, the way in which they are packed, the supply in the market and the demand, and may fluctuate not only from day to day, but occasionally several times in one day. In the latter case consignments of a given quality sold by a commission agent are paid for on an average system. For instance, good lots of single daffodils offered in the early morning may fetch 3s. per dozen bunches, while lots of equal quality offered at other times in the day may fetch 2s. 9d., 2s. 6d., or even 2s. 3d. The agent selling the consignments will not remit to the consignor the exact amount fetched by his goods but the average of all the lots of that quality sold by the agent on that day. In this way all consignors of a given quality of flowers will be remunerated on an equal basis, regardless of the exact time of the sale of their respective lots.)

ECONOMIC ASPECTS.

Rent.—In the neighbourhood of Spalding the rent of land is comparatively high. Three pounds per acre is not an uncommon rent for large farms, and is the minimum rate for small quantities of land. The rent of land regarded as specially suitable for bulbs ranges between 6*l.* and 10*l.* per acre, and while none is obtainable at less than 6*l.*, much is let at 8*l.* The average value of good land in the neighbourhood is between 70*l.* and 80*l.* per acre, while small quantities frequently fetch over 100*l.*, and the value of bulb land is estimated at from 150*l.* to 200*l.* per acre.¹ There is a keen demand for dry

¹ This compares very favourably with Dutch conditions. "The Dutch bulb land, the best of which is round about Haarlem at the foot of the dunes is valued at from 320*l.* to 600*l.* per acre." (*Home Counties, op. cit.*, p. 86.) Thus the English grower has the advantage of a lower capitalisation of land and consequently less interest charge.

Comparative Prices of English, French, and Channel Island Flowers, Covent Garden, 1915
PER DOZEN BUNCHES.

	English			French			Guernsey and Solly			
	Single Daffodils	Double Daffodils	Soleil d'Or	Pheasant Eye	Daffodil Foliage	Paper White	Soleil d'Or	Daffodils	Paper White	Soleil d'Or
December 30 (1914).	s. 10 to 15	s. —	s. 4/6 to 5	—	s. —	s. 2/6 to 3	s. 2/6 to 3	—	—	—
January 6	8 " 15	—	4/6 " 6	—	—	1/6 " 2	2/6 " 3	—	—	—
" 13	10 " 15	—	—	—	3 to 4	1/6 " 2	2/6 " 3	—	—	—
" 20	6 " 8	8 to 9	—	8 to 9	2/6 " 3	1/6 " 2	2/6 " 3	6	3 to 4	4 to 5
" 27	5 " 6	8 " 9	—	3/6 " 4	2/6 " 3	3 " 3/6	2 " 2/6	4/6 to 5	3 " 4	3 " 4
February 3	5 " 6	4 " 6	—	3/6 " 4	2 " 2/6	4 " 4/6	2 " 2/6	4/6 to 5	3 " 4	3 " 4
" 10	4 " 6	4 " 6	—	3/6 " 4	2 " 2/6	3 " 4	2 " 2/6	2/6 " 3/6	3/6 " 4	2 " 2/6
" 17	3/6 " 6	3 " 4	—	3 " 3/6	1/6 " 2/6	3 " 4	—	2/6 " 3/6	3/6 " 4	1/6 " 2
" 24	3/6 " 6	3 " 4	—	3 " 3/6	1/6 " 2/6	2/6 " 3	—	2/6 " 3/6	3/6 " 4	1/6 " 2
March 3	2 " 3	2 " 3	—	3 " 3/6	1/6 " 2/6	2/6 " 3	—	1 " 2	2/6 " 3/6	1/6 " 2
" 10	1/6 " 3/6	1/6 " 2	—	2/6 " 3	1/6 " 2/6	—	—	1 " 2	2/6 " 3/6	1/6 " 2
" 17	1/6 " 3	1/6 " 2	—	2 " 2/6	1/6 " 2/6	—	—	1 " 2	2/6 " 3/6	1/6 " 2
" 24	1/6 " 3	1/6 " 2	—	2 " 2/6	1/6 " 2/6	—	—	1 " 2	2/6	1/6 " 2
" 31	1/6 " 3	1/6 " 2	—	2 " 2/6	1/6 " 2/6	—	—	1 " 2	2/6	1/6 " 2
April 7	1/6 " 3	1/6 " 2	—	2 " 2/6	1/6 " 2/6	—	—	1 " 2	—	Monarque
" 14	1 " 1/6	1 " 1/6	—	1/6 " 2/6	1/6 " 2/6	—	—	1	—	1/6 to 2
" 21	1 " 1/6	1 " 1/6	—	1	1/6 " 2/6	—	—	1	—	1/6
" 28	1 " 1/6	1 " 1/6	—	1	1/6 " 2/6	—	—	1	—	1/6
May 5	2 " 2/6	—	Flora Pompeii	1 " 2	1/6 " 2/6	—	—	—	—	—
" 12	2 " 2/6	—	2/6 " 8/6	1/9 " 2	—	—	—	—	—	—
" 19	—	—	1/9 " 2	1/9 " 2	—	—	—	—	—	—
" 26	—	—	—	1/9 " 2	—	—	—	—	—	—

1. Mostly of Scotch origin.

and of good texture which can be used for bulbs and market gardening, and both rent and value are appreciated accordingly.

Capital.—It would be difficult to estimate the average capital employed per acre in bulb growing, as conditions vary on each farm, but notwithstanding this it may be said that the capitalisation is heavy. The implement equipment would be similar to that on a good farm on which potatoes were grown, but to this must be added the value of the drying trays for bulbs, the pans used for flowers while they are opening in the sheds, and packing boxes, with shedding necessary to shelter workers while tying and packing flowers, all of which are necessary for outdoor culture. Then, for forcing, must be added the glass houses and equipment. The stock of bulbs is also valuable. The stock required to plant an acre may be worth anything from 30*l.* to 100*l.* A grower may frequently pay as much as 30*l.* per ton for a good strain, in which case the cost of planting an acre may be from 90*l.* to 120*l.* Also a large amount of free capital is necessary for the payment of wages.

Labour.—On a farm of 100 acres, largely concerned with the production of bulbs, flowers, and vegetables, the average weekly wage bill amounts to between 70*l.* and 80*l.* A large amount of the special bulb work is done by women, who are regularly employed from the beginning of the forcing season to the middle of October. They do the picking, tying, weeding, and help with the lifting, grading and planting. No particularly high wages are paid in the business except in the case of special foremen on the larger farms. The rate paid to men is the general rate in the district. Some of the work, however, is done by the piece. The price for cutting flowers is 2*d.* to 2½*d.* per 1,000, and for tying 2½*d.* per 1,000. The general rate for women is 1*s.* 9*d.* per day from 7.30 a.m. to 4.30 p.m., with one hour for dinner. They used to work for the same or rather lower rates from 7 a.m. to 5.30 p.m., with one and a half hours for two meals, but a strong demand for their labour has placed them in a better bargaining position, and has enabled them to improve their conditions. Some bulb growers and market gardeners have established the Saturday half-holiday for their employees. As in the case of capital, the amount of labour employed is much in excess of even good class farming in other counties, and the intensive application of capital and labour keeps the land in a highly productive condition.

Costs and Returns.—Nothing short of a detailed account of receipts and expenditure, with a careful estimate of deterioration of equipment and the capital value of tillages and manuring over a period of some three or four years could be regarded as a guide to the financial results of bulb growing. At present

this is not obtainable. The wide variation of results as arrived at by estimate may be seen in the following tables of the returns from one acre of daffodils.

Estimate No. I.

INCOME.			EXPENDITURE.		
	£	s. d.		£	s. d.
200,000 blooms per year for 3 years at 10d. per gross	173	12 0	Gathering, bunching, and packing bloom per year for 3 years at 1s. 6d. per gross bunches	26	0 9
Value of bulbs at end of 3 years	150	0 0	Carriage and commission for 3 years at 55% on 173l. 12s.	95	9 6
			Incidental expenses, clerical, &c., 6% on 173l. 12s.	10	8 3
			Rent, rates and taxes for 3 years	18	0 0
			Manure	15	0 0
			Soot (2nd and 3rd years)	5	0 0
			Preparation of land	4	0 0
			Bulbs for planting	75	0 0
			Cost of planting	4	0 0
			Cleaning land, 3 years	15	0 0
			Lifting bulbs	8	0 0
			Cleaning and sizing bulbs.	2	0 0
			Profit on 3 years	45	13 6
	£323	12 0		£323	12 0

Or an annual profit per acre of 15l. 4s. 6d.

Estimate No. II.

INCOME.			EXPENDITURE.		
	£	s. d.		£	s. d.
200,000 blooms per year for 3 years at 10½d. per gross	182	5 9	Gathering, bunching, and packing blooms per year for 3 years at 1s. 6d. per gross bunches	26	0 9
Value of bulbs at end of 3 years	200	0 0	Carriage and commission for 3 years at 40% on 182l. 5s. 9d.	72	18 3
			Incidental expenses, clerical, &c., 5% on 182l. 5s. 9d.	9	2 3
			Rent, rates and taxes for 3 years	18	0 0
			Manure	16	5 0
			Soot (2nd and 3rd years)	5	0 0
			Preparation of land	4	0 0
			Bulbs for planting	100	0 0
			Cost of planting	6	0 0
			Cleaning land, 3 years	18	0 0
			Lifting bulbs	9	0 0
			Profit on 3 years	97	19 6
	£382	5 9		£382	5 9

Or an annual profit per acre of 32l. 13s. 2d.

Estimate No. I. is from *Board of Agriculture Leaflet No. 224*, 1913, whilst No. II. is from *Journal of Board of Agriculture*, March 1909.

The discrepancy between these two estimates of over 16*l.* per acre in the annual net profit shows the weakness of estimates. Further, without detailed accounts of costs and returns it is impossible to separate the outdoor cultivation from the forcing business, or indeed the whole of the bulb culture from the potatoes, or other crops which go to make up the system of which bulb growing forms a part. The net profit results indicated in both estimates are possible, and it should be noted that they are by no means as large as they appear. In the first estimate, in which the value of seed amounts to 75*l.*, the total capital applied would probably amount to 125*l.* per acre, which at 5 per cent., requires 6*l.* 5*s.* per annum as interest, leaving 8*l.* 19*s.* 6*d.* as the real net profit, for the amount due to the growers' managerial ability. In the second estimate, in which the value of seed amounts to 100*l.*, the total capital applied would probably amount to 150*l.* per acre, which would require 7*l.* 10*s.* as interest, thus leaving the farmer a net profit of 25*l.* 3*s.* 2*d.* The real net profit as shown in the first estimate cannot be regarded as high in an agricultural business in which the application of capital and labour is so intensive as in bulb growing, and as far as can be judged it is actually exceeded in many instances.

But it should be borne in mind that the returns in an industry like bulb growing are not quite so certain as in the case of such staple products as wheat, meat, or milk. A decline in general prosperity is certain to be felt most quickly by the producers of luxuries; further, such trade is somewhat subject to the vagaries of fashion. As previously stated, irises are by no means so favoured as cut flowers as they used to be, and gladioli have suffered somewhat in the same way. As new flowers for decorative purposes are brought forward, or as new varieties are propagated, a farmer may find his stock falling in value. Such an industry has in it some of the elements of speculation, and while it is fairly certain that the demand for cut flowers will grow while a period of prosperity continues and the taste of the artisan classes is educated towards the choicer luxuries of life, it is by no means certain that the demand for any particular variety of flowers will grow, or even continue for a long period of years. The management of the industry requires men who are capable of close attention to a market and of appreciating its developments, being capable of varying the supply to meet demands. Still, in the case of daffodils, the Lincolnshire growers are cultivating one of the staples of the cut flower market, the general demand for which is likely to last so long as incomes permit the purchase of such luxuries.

GENERAL RESULTS.

But perhaps the net result of the bulb industry is best indicated by the general prosperity of the neighbourhood. The production of potatoes, vegetables, fruit, flowers and bulbs necessitates the employment of a comparatively high ratio of capital and labour. Every yard of land is valuable. On some farms it is common to plough right up to the hedge, even the hedgerows being occasionally dug and hoed to keep them clean. In some parts of the fens farmers are buying farms whenever it is possible and on doing so they proceed to cut down timber, remove many of the fences, leaving only the boundary, square out the fields anew, and, where necessary, dig new ditches. The occupying-owner of a farm near Spalding who has lived in the neighbourhood since childhood, and who is himself a producer of vegetables and bulbs, states that as the result of the new type of farming the general production of the land has nearly doubled within the last fifteen or twenty years. Thus where there are favourable soil conditions, and capital is applied by managers who can understand a comparatively new and varying market, the type of agriculture which is required to meet the demands of an industrial population develops. The land is used to the best possible advantage and increases its capital and productive value in the process, a greater population is maintained upon the land, the farmer generally reaps favourable results from his enterprise, and the nation is served both by the maintenance of the population upon the land and the heavier production of necessities and the commoner luxuries for the people at large.

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II.—CHICORY OR SUCCORY.

CHICORY (*Cichorium Intybus*) is a plant which in its cultivated state is practically unheard of at the present time in the United Kingdom save in one or two districts in Cambridgeshire.

In its wild state, when it is usually called succory, it occurs fairly commonly especially along road sides and in derelict grass fields, its bright blue flowers making it very conspicuous in such places.

Quite recently, however, it has been strongly recommended in some quarters that a few pounds per acre of its seed be added to temporary grass leys, its pronounced deep rooting habit lending itself to the improvement of soils by causing better aeration and natural drainage.

The plant in itself is a perennial herb, readily eaten by sheep, flowering in its second and subsequent years. In habit of growth the leaves are very like the common dandelion and it also resembles that plant in the bitter milky juice which it contains. The root itself is similar in appearance to an ordinary small parsnip.

Arthur Young, about 1780, suggested its being grown by English agriculturists because of its large yield of food either for soiling or feeding off by sheep, even on the poorest and most barren soils its resistance to drought being remarkable. There is abundant evidence that it was largely grown as a fodder crop from about the date mentioned to the early years of the last century.

The subject mainly of this article, however, is the cultivation of chicory in its relationship to human food. Chicory is grown either for table use, as a vegetable, in its various stages, for fodder for cattle and sheep, or for its roots from which the chicory—as we know it in the grocer's shop—is derived.

On the Continent, especially in Belgium, France and Germany, it plays an important part in the natural croppings occupying its place regularly in the schema of rotation used by the farmers.

Statistics show that in 1913 the total imports from Belgium to this country alone were 86,432 cwt. of kiln-dried chicory, showing plainly that there is a considerable demand for it as an article of human consumption.

VARIETIES.

The variety generally grown is known as Magdeburg, which has large upright leaves and a long root averaging 15 to 18 in. in length with a circumference in the thickest part of 8 or 8½ in. Other useful kinds are known as the Schlesiische and the Palinghop.

SOIL.

Whatever the soil may be it is absolutely necessary for success that there should be a subsoil of a deep friable nature and open texture, as the penetrating power of the improved cultivated root is not great. Any deep, easily worked soil appears to grow this crop quite well, whether it be loam, silt, or even fen land. The roots, however, yield a better percentage of dry matter when grown on a soil of fairly strong body, though the working expenses are somewhat heavier in consequence.

ROTATION.

If chicory is to take the place of ordinary "roots" or fallow crops the dung must have been applied to the previous crop or

put on early in the autumn, as close contact with fresh dung causes fanging, which is fatal to good results. The amount of artificial manures that are required to obtain a heavy yield together with the opening up of the soil by the deep rooting action of the plant ensures a good following crop. It is not advisable to follow with a cereal crop owing to the wonderful tenacity of life which the small bits of broken root have. Large tough flowering stems spring up and persist in keeping ahead of the surrounding corn causing the working of the binder to be difficult and resulting in loss of time. Both potatoes and mangolds can follow chicory with good results. It is often advisable, and is quite sound farming, to take a second or even a third crop off the same ground consecutively.

CULTURAL OPERATIONS.

If chicory is to be taken after a corn crop an early light ploughing and cleaning should be given during autumn, followed by a dressing of 10 tons of dung per acre, which should be ploughed in a good depth, not less than 6 in., and the deeper the better. The field should then be left undisturbed until late spring, say April, when it should be either ploughed or properly worked, care being taken to ensure a very fine tilth or seed bed. Should there be any "pan," subsoiling is an essential operation to be performed.

If the crop is taken after any crop that had been dunged previously, then it is not usual to apply dung again for the chicory.

The question of artificials is one which must be left to the natural requirements of the particular fields, but it is safe to say that the crop will respond in a marked degree to heavy dressings, 7 cwt. of a complete manure comprising 2 cwt. of a nitrogenous manure, 4 cwt. of a phosphatic manure, and 1 cwt. of potash, are none too much, part of the nitrogen being applied as a top dressing after singling.

The fine seed bed being prepared, drilling the seed takes place towards the end of April or the beginning of May. The seed being very small extreme care must be taken when drilling to see that it is only just covered in the soil. It should be barely a quarter of an inch deep. The distance apart of the drills is more a matter of the cleanness of the soil than anything else, and the nearer the rows are together the greater the weight per acre that can be obtained. In land that is very clean and free from annual weeds 8 to 10 in. apart is sufficient, but, on the other hand, where weeds are at all troublesome 18 or 20 in. is none too much. Room must be left between the rows for the "hoed up" weeds to decay.

Chicory likes a solid or firm top soil in which to germinate, and it is therefore important to keep the roller going before drilling and after. Sometimes it is necessary lightly to harrow after drilling, but the grower should always finish off with a light flat roller across the drills.

A sufficient seed rate per acre is 3 lb. and it should not be sown too early as the plants are apt to run to seed—being like mangolds in this respect.

A side hoeing should be given as soon as the young plants are well established or when they show their fourth leaf. Singling follows about a fortnight later and this is the most important operation of the crop. The roots should be left from 6 to 8 in. apart. The best method of singling is by hand with small hand hoes—such as are used by carrot growers—the plants on either side of the selected ones being pulled out by the fingers. For the reason that any plant cut off just under the ground will soon throw out fresh buds and will require singling again. Future hoeing should take place as long as it is possible to get between the rows.

The few plants that have “run to seed” should be pulled out and removed during July and August, as their roots spoil to a large extent the quality of the crop.

Harvesting takes place during October and November. The roots, which are buried in the soil, take a lot of lifting out, and resort to the fork is necessary in many instances. In favourable seasons and after some practice it is possible to use a plough with good effect. One fairly large grower in Cambridgeshire uses a chilled plough, with four horses in length attached, taking a very deep furrow, possibly 14 in. and he is thus enabled to do away with the heavy expense of hand labour.

The roots when raised are stored in clamps or pits, like mangolds, until such time as they can be delivered to a factory or sent to any possible market.

COST OF CULTIVATION.

In the Board of Agriculture's Journal for February, 1915, the following figures were used in estimating the average cost per acre:—

	£	s.	d.
Twice ploughing and harrowing	1	0	0
Seed and sowing	0	10	0
Manures	4	10	0
Hoeing and singling	2	10	0
Digging and washing	2	15	0
Carting or rail to factory	1	10	0
Rent, rates and taxes	2	5	0
Per acre	15	0	0

This appears to be quite high enough and allowance should be made for residual manurial values and, as in France an

estimate of working expenses in 1901 was 12*l.* per acre, it would be quite a fair estimate to say from 12*l.* to 14*l.* per acre, according to manures used and distance from the factory.

The yield per acre varies very considerably. A friend of the writer's has grown as much as 18 tons per acre which he sold delivered at the factory at 30*s.* per ton of green roots, giving him a gross return of 27*l.* per acre. Deducting the full estimate of 14*l.* for cultivations he realized a handsome profit for his trouble and outlay. This, however, is a record crop for this particular district, and, unfortunately, it is not often equalled, but it serves to show what can be done under favourable conditions.

The average yield in the west of Cambridgeshire is something like 10 tons to the acre. Accepting this and the foregoing figures as to cost of production as reliable, the result works out at the following per acre :—

	£	s.	d.
Cost of production for 10 tons	13	0	0
Value of produce at 30 <i>s.</i> per ton	15	0	0

The preparation of Chicory from the root is one which the farmer is not likely to entertain for himself, therefore it may be passed over in this article with the following brief description :—

At the factory or kiln the roots are washed, sliced into small sections, spread out in layers on trays arranged over coke fires, put through several turning processes and after some twenty hours are sufficiently dry to be stored away. Chicory in this condition is known as ordinary dried chicory. This has again to go through further processes of roasting, grinding, packing and distributing.

Chicory can no longer be regarded as an adulterant. Although used in this way originally a public taste for it has been cultivated which must be supplied, and even at the present time, when chicory is costing more than some coffees, the public insist upon having it so that it may almost be said that there is a tendency to adulterate chicory with coffee.

The figure used previously of 30*s.* per ton for the raw root is the highest price given by the actual chicory dryers in normal times and under average conditions. Owing to the competition from the Continent it was found that even at that price a reasonable profit could barely be made, and as a consequence the chicory industry in Yorkshire died out. At the present time there are only two drying factories working in England, both in Cambridgeshire, or just on its borders. It is neither fair nor wise to quote the ruling prices of chicory today as a basis for trying to persuade farmers to grow this crop for the following reasons :—

1. After this war is over it is fair to suppose that the countries from which we have imported practically all the chicory we require, will use every endeavour to increase if possible their original output.

2. The comparatively limited demand for this product, which, if grown here to any extent, would so reduce the price that any profitable return per acre would be impossible.

3. To make this crop remunerative to the grower, a factory should be within carting distance, and unless fresh capital is put into the building of new ones—in various parts of the country—it is a feasible proposition only for those farmers who may be in the vicinity of the present existing factories or drying kilns.¹

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III.—BUCKWHEAT.

BUCKWHEAT (*Polygonum fagopyrum*) or brank is a species of grain fit for human consumption, which, however, is very little grown in this country. There are three chief varieties—

1. The common—as mentioned above.
2. Siberian—*Polygonum tartaricum*.
3. Notch-seeded—*Polygonum emarginatum*.

The first variety only is in general use.

The name buckwheat appears to be derived from the old English buck, meaning beech, as the triangular seeds of the former strongly resemble the “mast” of the beech.

The natural order Polygonaceæ includes many of the common weeds of the farm, amongst them being *P. Convolvulus*, generally known as barley bindweed, black bindweed, or creeping buckwheat. This is a common and well-known weed in most parts of England and has a fruit or a grain very similar in shape and texture to that of commercial buckwheat.

Common buckwheat is an annual plant with smooth round pink esculent stems growing to a height of two to four feet, with alternate heart shaped leaves. The flowers which are pinkish white grow in clusters or in crowded panicles.

The soil requirements of buckwheat are easily supplied for it grows well on any soil, but its cultivation on good land is not advisable for such land will grow other ordinary farm crops that give better financial returns. The chief value of this crop lies in the fact that it grows, and grows well, in poor light dry

¹ There seems to be a considerable analogy between this crop and the sugar-beet as regards the methods of growth and conditions of marketing. —[Ed.]

soils, can be sown very late in the season, and requires very simple methods of cultivation.

The districts in which it is most cultivated are the Fen areas of Norfolk, Suffolk, and Cambridge, and the thin poor soils—either sandy or chalk—found in East Anglia.

It does not appear to occupy any particular order in a rotation, but could easily take the place of a spring sown cereal and where land is infested with charlock or the crops are liable to the disastrous attacks of various insect pests it might be tried with beneficial results. One large grower of mustard seed told the writer that it was an invaluable crop for him as he always grows it in the year following one in which he has had his mustard ruined by “beetle,” thereby producing a useful paying crop and giving his land a year in which to combat the pest.

The crop in a young green state is sometimes fed to cattle and pigs, but care must be taken when the plant is fully developed owing to a condition similar to that of intoxication which it produces in animals when too much is given.

It is a very good catch-crop owing to its short growing season—from twelve to fourteen weeks only from sowing to its being fit for harvesting. A crop of buckwheat can often be taken when the season is too far advanced for any other readily marketable crop. This quick growing habit of the plant makes it extremely useful to the farmer who wishes to make use of all the odd corners and bare pieces of ground that may be left after mangel or potato “clamps,” or where stacks may have been standing in the field. It has great value also for ploughing in green, increasing the humus and improving the tilth and fertility of the soil in a marked degree, its thick dense growth choking or smothering any annual weeds in a manner similar to that of a heavy crop of tares. It is a crop often grown by men of sporting instincts owing to the great attraction it has for pheasants and other game, supplying abundance of food as well as that quiet shade to which all kinds of game are so partial.

The usual time of sowing is from the middle of May onwards. It cannot be sown earlier as the plant is extremely susceptible to the slightest frost, the whole crop being often destroyed by a single night's frost. This is certainly the chief drawback to the cultivation of the crop.

The amount of seed to be sown depends upon the requirements. If the crop is needed for seed purposes one bushel to six pecks per acre are ample, varying as the season advances as is usual in cereal crops. The drill rows should preferably be about 14 in. apart. When sown for green manuring it is better sown broadcast and at the rate of 2 to 3 bushels per acre.

The average weight per bushel is 50 lb. There is no special cultivation necessary. Perhaps the ideal method

consists of an early autumn deep ploughing, thereby ensuring a fine tilth, followed by a late spring ploughing with subsequent harrowing and rolling. This would apply only to the light poor soils before mentioned, as on ordinary fair to medium land the above cultivations would warrant a more important crop.

The methods of harvesting vary considerably according to the fancy or opportunity of the grower. One uses a self binder, letting the sheaves lie on the ground for a week or ten days, and afterwards "shocking up" with the weathered side inmost. Another uses the reaper or self raker, "setting it up" after a few days, loose, in little shocks, the entwining and clinging habit of the plant allowing this to be done. A third, who uses a reaper, leaves his sheaves loose for say four or five days, and then has them folded—dry side inmost—and tied, afterwards "shocking" them up.

Any of these methods may safely be used, as the seed or grain is not easily shaken out, but plenty of time must be given in the field owing to the great amount of sap existing in the stem. A peculiar habit of this crop is a prolonged season of flowering right on into the late autumn, therefore one finds seeds at all stages of ripening. The ideal time for cutting is when the largest number of ripened seeds is to be found. This is, as a rule, about the end of August or early in September, a useful fact to the busy farmer who has the bulk of his other harvesting well forward.

This long flowering season makes the crop a favourite one with bee-keepers, supplying material for many weeks for the formation of good honey.

Buckwheat when harvested is used in this country chiefly as poultry food. When cracked or ground it is a good food for either horses, milch cows or pigs, if used in small quantities, but the stupefying effects mentioned earlier prevent it being used largely. In America excellent flat cakes are made of buckwheat and eaten hot with maple honey or golden syrup. They are delicious and, although buckwheat is not as nutritious as English wheaten flour, they form a very good food. It is surprising that as a dish they are not better known in this country. The composition of the grain as compared with the cereals is as follows:—

	Moisture	Albuminoids	Carbohydrates	Fibre
	Per cent.	Per cent.	Per cent.	Per cent.
Buckwheat	13	4.5	35.5	40
Oats	12.25	8.4	62	10
Barley	13.5	11.2	65.5	5.5
Wheat	13	12.5	68	2.5

The yield per acre varies considerably, as do all other crops, owing to the condition of the land, climatic influences, and methods of growing. As much as seven quarters per acre can be, and often is, grown under suitable conditions, and so small a yield as two or two and a half quarters is also known. Four quarters per acre would be a fair average yield. The weight per quarter as sold in the local markets is twenty-eight stones. The price fluctuates with that of other cereals and is generally in normal times some four shillings per quarter lower than that of wheat.

The cost of growing this crop cannot easily be set out because, as before stated, it is generally sown when it is found impossible for some cause or other to sow a pre-arranged crop, or it is used as a preparation for some future cropping. If it should be grown in lieu of other spring corn, then the cost would be practically the same as either barley or oats, with an anticipated gross return of 6*l.* per acre for the grain alone. The haulm has considerable value, making palatable food when cut and mixed with other chaff.

The prices quoted in the day's market reports at the time of writing are, for buckwheat—

English, none.
French, per 416 lb., 40*s.* to 41*s.*

as against—

Wheat, per 504 lb., 44*s.* to 47*s.*

For purposes of better comparison quotations may be given from Mark Lane returns for November, 1914 :—

Wheat.

English Red, per 504 lb., 39*s.* 6*d.* to 42*s.* 6*d.*
" Poultry, per 504 lb., 36*s.* 6*d.* to 37*s.* 6*d.*

Buckwheat.

English, per 416 lb., 35*s.* to 36*s.*
Russian, per 416 lb., 38*s.* to 40*s.*
French, per 416 lb., 35*s.* to 36*s.*

In conclusion one may say that buckwheat should be more known and grown either as a filling up crop, a catch crop, or for ploughing in green.

HENRY HENSHAW.

Histon.
Cambridgeshire.

CONTEMPORARY AGRICULTURAL LAW.

I.—LEGISLATION.

AGRICULTURAL interests are affected by several Acts of Parliament passed in 1915.

Some of these Acts are due to the emergencies of war and may therefore be deemed to be of a temporary character. It is proposed to notice these in the first instance.

The Army Act, 1881 (44 and 45 Vict., c. 58), is amended by the Army (Amendment) Act, 1915 (5 Geo. 5, c. 26). Section 2 of the latter Act amends Sub-section 4 of Section 125 of the earlier Act which provides for the requisitioning of carriages, animals and other things in case of emergency by enacting that the Army Council shall cause due payment to be made for carriages, animals, vessels and aircraft furnished in pursuance of that Section, and that if any difference arises respecting the amount of payment for any carriage, animal, vessel or aircraft the amount shall be such as may be fixed by a certificate of a County Court judge having jurisdiction in any place in which such carriage, animal, vessel or aircraft was furnished or through which it travelled in pursuance of the requisition, and when a sum has been paid or tendered by or on behalf of the Army Council, that sum is to be deemed to be the amount due unless within three weeks from the date of payment or tender an application is made to a County Court judge for his certificate. The Schedule to the Act contains provisions as to determining the amount to be paid for articles requisitioned. The application to the County Court Judge for a certificate is to be made in manner provided by Rules of Court and is to be heard by the judge without a jury, and his decision is not subject to appeal. The amount fixed by the certificate is to be such amount as appears to the judge "to be the fair market value of the article requisitioned on the day on which it was required to be furnished as between a willing buyer and a willing seller," and shall, when the owner of a carriage or horse has been required to deliver it at a distance from his premises, include a sum to cover the cost of delivery. No court fees are payable on the application, but the judge may, if he thinks fit, order either party to pay such sum as he may consider proper by way of costs to the other party. The Army (Amendment) No. 2 Act, 1915 (5 and 6 Geo. 5, c. 58), amends the Section 115 of the Army Act by substituting the words "carriages, animals, vessels, aircraft, food, forage and stores" for "carriages, animals, vessels and aircraft," so that the provisions as to requisitioning

are extended by this Act and the Army (Supply of Food, Forage and Stores) Act, 1914 (4 and 5 Geo. 5, c. 26), to food, forage and stores in addition to the articles named in Section 115. Under the provisions of these Acts cases have since the commencement of the war come before county court judges where differences have arisen as to the price to be paid for articles requisitioned. An important case of this sort was *Wilkes, Ltd., v. Army Council*, heard by H.H. Judge Tindal Atkinson on January 15 last (reported 51 *Law Journal*, page 52). The articles requisitioned were 82 tons of mixture hay and 25 tons of meadow hay at a farm in Hertfordshire, and the order for the requisition was dated July 12, 1915. The judge held that the "day on which the hay was required to be furnished" was for the purpose of fixing the price, not the date of actual delivery but the date of the impressment order or requisition. He also held that "the fair market value" to be paid was not the market price on that day in London, but the fair price passing on that day between willing sellers and willing purchasers of that class of hay in the place and neighbourhood where the hay was requisitioned. He considered that the prices offered by the Assessment Committee, viz., 88s. 6d. per ton for the mixture and 82s. 6d. per ton for the meadow hay, was the fair market value of the hay on July 12, 1915, which was less than the plaintiffs claimed and he made his certificate accordingly.

The Maintenance of Live Stock Act, 1915 (5 and 6 Geo. 5, c. 65), gives power to the Board of Agriculture and Fisheries for the purpose of maintaining a sufficient stock of animals by Order (a) to prohibit or restrict the slaughter of animals except male lambs; (b) to prohibit or restrict the sale or exposure for sale of meat of immature animals which has not been imported; (c) to authorise any local authority specified in the Order to execute and enforce within their district all or any of the provisions of the Order, and provide for the manner in which the expenses incurred by the authority are to be defrayed; (d) to authorise any officer of the Board or of a local authority to enter any slaughterhouse or other premises on which animals are slaughtered for human food and examine any animals or carcases therein; (e) to prohibit or restrict the movement of animals out of any area in which the slaughter of such animals is prohibited or restricted; (f) to authorise or require the marking of animals for the purposes of an Order under the Act. The animals to which the Act applies are cattle, sheep and swine. An Order in Council under this Act, dated August 18, 1915, forbids the slaughter of an animal which is visibly or obviously in-calf or in-pig, and of calves, except calves of Channel Island, Ayrshire, and Kerry and Dexter breeds, and calves which

have been offered for sale by public auction, subject to a reserve price of 30s. or less, and for which no bid exceeding 30s. has been made. A "calf" is defined as a "bovine animal in which the first permanent molar or grinder tooth is not cut and visible."

Acts of Parliament passed and not having reference to war emergencies are the Land Drainage Act, 1914, and the Milk and Dairies (Consolidation) Act, 1915. The Land Drainage Act, 1914 (5 Geo. 5, c. 4) empowers the Board of Agriculture and Fisheries, if they are of opinion that the execution of any work of drainage, embankment, or defence against water is desirable for the improvement or protection of any area, by Provisional Order to constitute a body (corporate or unincorporate) for the purpose, and to authorise the execution of the work by the body so constituted, and make such provision for the execution and maintenance of the work as the Board may think proper. A Provisional Order may define the area for the improvement and protection of which the work is executed, define the powers and duties of the body constituted, provide for the raising of expenses by rating and borrowing, or by requiring contributions from other rating authorities exercising authority within the area defined by the Order, and enable the body constituted to acquire land by agreement or compulsorily. The powers of making Provisional Orders under the Act are not to be exercised after the expiration of two years from its passing.

The Milk and Dairies (Consolidation) Act, 1915 (5 and 6 Geo. 5, c. 66), was passed to consolidate previous enactments relating to Milk and Dairies, and it embodies the provisions of the Milk and Dairies Act, 1914 (4 and 5 Geo. 5, c. 49), which was summarised in the article on "Contemporary Agricultural Law" in this Journal for 1914, and which it is unnecessary to repeat here. It also contains provisions previously enacted by the Contagious Diseases (Animals) Act, 1878 (41 and 42 Vict., c. 74), the Contagious Diseases (Animals) Act, 1886 (49 and 50 Vict., c. 32), and Sections 9 and 11 of the Sale of Food and Drugs Act, 1899 (62 and 63 Vict., c. 51). It is provided that the Act shall not come into operation at once but only on such date not being later than the expiration of one year after the termination of the present war as the Local Government Board may by order appoint.

The Finance (No. 2) Act, 1915 (5 and 6 Geo. 5, c. 89), which provides for the increases in the rate of income tax at present in force, contains an important provision in respect of income tax on the occupation of land under Schedule B. It is enacted by Section 22 Sub-section 1 of the Act that income tax shall be charged on the whole annual value of the land as assessed

for the purposes of Schedule A and not on one-third only as provided by Section 26 of the Finance Act, 1896 (59 and 60 Vict., c. 26). The right of a person occupying lands for the purposes of husbandry to be assessed under Schedule D on the basis of his annual profits or gains is, however, preserved and may be signified at any time before February 7, 1916. Sub-section 4 of Section 22 gives the right to a person occupying woodlands, who proves to the satisfaction of the General Commissioners that those woodlands are managed by him on a commercial basis and with a view to the realisation of profits, to elect to be charged to income tax under Schedule D instead of Schedule B in the same manner as a person occupying lands for the purposes of husbandry only, but any such election must extend to all woodlands so managed on the same estate, and the election shall have effect not only as respects the year of assessment, but also as respects all future years of assessment so long as the woodlands are occupied by the person making the election. The business of husbandry in the United Kingdom is by Section 39 of the Act expressly excluded from the liability to excess profits duty imposed on certain trades and business by Section 38.

II.—DECISIONS OF THE COURT.

1. *Labour*. There have been several cases decided under the Workmen's Compensation Act, 1906 (6 Edw., 7, c. 58), of interest to those employing labour for agricultural purposes. In *Newson v. Burstall* (84 L.J.K.B., 535), the question was whether an accident which happened to a casual labourer arose "out of and in the course of" his employment by a farmer so as to render the latter liable to compensation under the Act. The farmer employed a proprietor of threshing engines and machines to supply an engine and machine, accompanied by two men to drive and feed it, for the purpose of threshing two stacks of corn. According to the practice in the neighbourhood several casual labourers followed the threshing machine in expectation of being taken on by the various farmers to assist in the threshing. On January 9, 1914, the threshing machine arrived at the farm accompanied by six casual labourers of whom the applicant was one. They were all engaged by the farmer to assist in threshing at 2s. 6d. a day. After the threshing was finished and these men had been paid they helped the men with the threshing machine to move it off the farm on to the roadway. The machinery consisted of an engine, elevator and drum. The applicant was told by the engineman to take the clips off the engine. He did this, and as he was returning to the elevator the engine started suddenly

and pinned him between the drum and a gate inflicting various injuries on him for which he claimed compensation from the farmer. It appeared from the evidence that the casual labourers employed always helped to get the threshing tackle on to and off the farm, and that it often could not be done without their help. The farmer stated that when he hired the threshing machine with two men he knew he would have to supply the rest of the labour on the farm. The Court of Appeal held, affirming the decision of the County Court Judges (though Lord Justice Phillimore doubted), that it was part of the applicant's employment by the farmer to help in getting the threshing machine on to and off the farm, and, therefore, that the accident arose "out of and in the course of" his employment by the farmer so as to render the latter liable to compensation for the injury.

Smith v. Burton (84 L.J.K.B., 697) is another case dealing with employment alleged to be of a "casual nature," but, it differed from the former case because the employment in question was work in the woods on a gentleman's estate, which it was contended (though this was not decided) was not "for the purpose of the employer's trade or business," in which case if the employment were "casual" the workman would not be a "workman" entitled to compensation under the definition in Sec. 13 of the Act. The applicant was employed at timber gilling or shifting in some woods on the respondent's estate and while so employed was knocked down by the tail end of the gill with the result that his right leg was broken and the ankle joint injured. The evidence of the applicant was that he had previously been employed as gamekeeper and warrener for seven years by the respondent, who gave up gamekeeping for a time, that since then he had done work for the respondent and also for others, that the kind of work he did through the year was—that in winter time he was a warrener from Michaelmas to the end of February, and after that he used to work in the woods for the respondent, that he was then keeper's assistant in rearing the birds, and after that did his harvest, that he worked for two or three months from December, 1912, to February, 1913, for the respondent and was paid 14s. a week, that he then assisted the respondent's keeper, and that then for about two months from the end of March to May 20, the date of the accident, he had been employed to assist the estate carpenter in the woods at 15s. a week and he lost no time through rain. The estate carpenter said the applicant was employed as a woodman from the end of March for so long as the plantation work lasted, assisting as a labourer when extra work was on, that he was paid by the week—15s. a week which would make 2s. 6d. a day. The applicant had worked under

him in previous years and always knew when work was coming on, so that it was not necessary to give him notice. He had worked for twenty years on and off for the respondent. Without expressing any opinion as to whether the County Court Judge was right or not in holding that the applicant was employed for the purposes of the respondent's trade or business, the Court of Appeal held that the employment was not of a casual nature and that the man was a "workman" within Section 13 of the Act, and entitled to compensation under the Act. In *Richards v. Pitt* (84 L.J.K.B. 1417) the question arose whether a hop picker was a "workman" under a "contract of service" so as to entitle her to compensation for injury by accident in the course of employment. The applicant was a girl of seventeen years of age in domestic service who arranged to go hop picking with her aunt during her fortnight's summer holiday. The aunt was employed to pick hops for the respondent, a farmer, at 1s. for six bushels. Besides the applicant she took with her the applicant's six brothers and sisters who were of ages varying from twelve months to fifteen years. They were accompanied by a neighbour and her family, and the aunt and neighbour shared a crib which was divided into two parts. The crib stood in their two names and each was paid for the hops collected into her share of the crib. On the last day of her fortnight the applicant met with an accident while hop picking and she claimed to recover compensation under the Workmen's Compensation Act, 1906, from the respondent. Three matters were mainly relied on as proving a contract of service between her and the respondent. First, she gave evidence that at an interview between her aunt and the respondent, at which she was present, she heard the respondent tell her aunt, that he would engage her (the applicant). In cross-examination she admitted, however, that she did not remember exactly what happened then, and it appeared that the respondent did not come to an agreement with the aunt till a subsequent date. Secondly, on reaching the hop garden the applicant and her aunt and a sister, fifteen years of age, went to the respondent's farm to get bed clothes for the family, and their names were taken as the persons responsible for what each received. Thirdly, some days after the hop picking commenced the three of them saw the respondent with regard to hiring money. The farmer gave the aunt 1s. for herself and she then asked for 6d. for each of the two girls, and on being given two sixpences, handed one of them to the applicant, who, however, told the aunt to keep it towards her food. It appeared from the evidence that it was usual to give a hop picker 1s. hiring money, and that when she brought her children who had come to an age when their work would be really useful.

she also received 6d. for each of them. It was held, reversing the decision of the County Court Judge, that there was no evidence to support a finding that the relationship of servant and employer existed between the applicant and respondent, and that she was therefore not entitled to compensation.

In *Whitfield v. Lambert* (84 L.J.K.B., 1378) a question of another character arose, viz., whether an accident to a farm servant arose "out of" his employment. The applicant Whitfield, a farm servant, on November 13, 1913, drove a horse and cart of the respondent, a farmer, from the respondent's farm to a railway station five miles away in order to fetch the applicant's box from the station to the farm. On the way to the station a motor car frightened the horse and an accident occurred, with the result that the applicant's leg was broken and had to be amputated, for which he claimed compensation. The applicant's evidence was that he was hired by the respondent on November 8, 1913, at Appleby to commence work on November 13, 1913, that at the hiring the respondent said that the applicant could have a horse and cart to convey his box from the station. He bicycled to the respondent's farm on November 13, and after dinner was shown a horse and cart to take to fetch his box, which he used for that purpose. He said that in all places he had been in before he had had the use of the farmer's horse and cart to carry his box. The County Court Judge found that the accident did not arise "in the course of" the employment, as it had not commenced when the accident occurred. He also held that it did not arise "out of" the employment. The Court of Appeal held that though it was a term of the employment that the applicant could have the use of a horse and cart to convey his box from the station to the farm, there was no contractual obligation on the farmer to have it fetched, and the accident therefore did not arise "out of" the employment, without, however, considering whether the County Court Judge was right in holding that it did not arise "in the course of" the employment because it had not commenced at the time of the accident.

In *Roper v. Freke* (84 L.J.K.B., 1351; [1915] 3 K.B., 222) the question of the meaning of the word "workman" and of "average weekly earnings" arose. The applicant, who was severely injured by the bursting of a milk separator, was a dairyman who was employed under a written agreement to "take charge of and manage" a herd of forty-five cows and heifers "according to instructions" from his employer, and to perform duties connected therewith "as and when required" by the employer, receiving therefor 45s. a week with a house and certain extras in the shape of coal, wood, milk, and butter. He was assisted by his two sisters, who lived with him, and

whom he paid for their assistance, though under no agreement with them. There was no agreement between the applicant and his employer that he would get or pay for assistance. Upon the claim for compensation it was held by the Court of Appeal that the applicant was a "workman" under Section 13 of the Act, and as such entitled to compensation for the accident. It was also held that in estimating his "average weekly earnings" under Schedule I., Clause 2 of the Act, for the purpose of arriving at the amount which he should receive for compensation it was not permissible to deduct the value of the assistance given by the sisters.

2. *Stock.* The cases relating to farm stock have not been numerous. *Whiting v. Ivens* (84 L.J.K.B., 1878) was a case of cruelty to animals. An owner of a horse was prosecuted for permitting it to be worked whilst in an infirm condition. The evidence was that the owner of horses used in his business deputed the entire management to his servant. He said to an inspector, "I am the boss, but I have nothing to do with the horses. In fact, I know no more about them than an infant." He was, however, aware that one of them was in poor condition, and yet allowed his servant to work it without further enquiry until it fell down, and was found to be very weak and quite unfit for work and had to be destroyed. Section 1, Sub-section 2 of the Protection of Animals Act, 1911 (1 and 2 Geo. 5, c. 27) enacts that "an owner shall be deemed to have permitted cruelty within the meaning of this Act if he shall have failed to exercise reasonable care and supervision in respect of the protection of the animal therefrom." The Justices before whom the matter came held that there was no evidence that the respondent had failed to exercise reasonable care and supervision in respect of the animal, but the Court of King's Bench held there was evidence raising a case to be answered by him, as the onus of proving that he had exercised reasonable care and supervision was on the owner.

British Chartered Co. of South Africa v. Lennox (31 Times L.R., 585) was a case of cattle poisoning. The appellants, who were owners of an estate in South Africa, ordered from the respondents, who were chemists and druggists, 5 cwt. arsenite of soda for the purpose of dipping cattle and it was delivered in ten drums on which were labels with the word "poison," and a statement that the tins contained $8\frac{1}{2}$ lb. of 80 per cent. arsenite of soda, and that the whole contents of the tin was to be dissolved in 400 gallons of water to make the dip. This statement was incorrect, each drum containing in fact 56 lb. of arsenite and the labels were meant for tins not drums. The manager of the appellants' estate, after communicating with the respondents believed that each drum contained

only $8\frac{1}{2}$ lb. of arsenite mixed with something else, and the whole of the ten drums were placed in 4,350 gallons of water. The dip so made was too strong and some of the appellants' cattle were killed and others were injured. In an action by the appellants against the respondents claiming damages for their negligence the respondents denied negligence and pleaded contributory negligence disentitling the appellants to relief. The judge at the trial found in favour of the appellants and on appeal it was held that there was evidence on which he could reasonably so find.

3. *Landlord and Tenant.* The validity of a notice to quit in respect of a yearly tenancy arose in *May v. Borup* (84 L.J.K.B., 823; [1915], 1 K.B., 830) where the tenancy agreement provided for its determination by six months notice to quit given on March 1 or September 1 in any year. The landlords, on December 23, 1913, sent a letter to the tenant saying, "We very much regret having to give you notice to quit . . . at the earliest possible moment." It was held that the words "at the earliest possible moment" were not too vague to constitute a good notice to quit and that the notice was a good one to effect a determination of the tenancy on September 1, 1914.

Tomkins v. Townend (4 L.J. County Courts Rep., 66) was a County Court case in which I.L.H. Judge Parry held that where part only of land comprised in a lease was used and cultivated as a market garden, the rest being used for building and other purposes, the part so used for a market garden was a "holding" within the Agricultural Holdings Act, 1908, Section 48, so as to give the tenant a right to compensation for market garden improvements on that part of the land.

4. *Produce.* In *McNair v. Terroni* (84 L.J.K.B., 357; [1915] 1 K.B., 526) the respondent, who kept an eating house, had on the counter in his shop a pan labelled "pure milk." The appellant, an inspector under the Sale of Food and Drugs Acts, asked to be supplied with a glass of milk from the counter pan for the purpose of analysis. The respondent's servant refused to serve him as he did not serve milk alone, the milk being on the premises only for the purpose of being added to cups of tea, coffee, cocoa or glasses of soda water. It was held that the milk was "exposed to sale, or on sale by retail" within the meaning of Section 17 of the Sale of Food and Drugs Act, 1875 (38 & 39 Vict., c. 63), notwithstanding that it was only sold mixed with something else and that therefore the respondent was guilty of the offence under Section 17 for refusing to sell to an inspector an article of food "exposed to sale, or on sale by retail," in his shop.

Gunyon v. South-Eastern and Chatham Railway Managing Committee (81 L.J.K.B., 1212; [1915] 2 K.B., 370) was a

case on the liability of a railway company for damage to fruit carried by them. The plaintiff delivered to the defendants, the railway company, a consignment of 40 half bushels of cherries to be "carried by passenger train or by other similar service . . . at reduced rates at owner's risk," upon the terms that in consideration of being charged a lower rate than the defendants' ordinary rate for carriage of fruit he would relieve the defendants from all liability for (*inter alia*) delay, except upon proof that such delay arose from wilful misconduct on the part of the defendants' servants. The cherries were duly despatched by passenger train from Kent to be conveyed to Glasgow, but in the course of the journey they were transferred to a goods train, with the result that they were delayed and became deteriorated in consequence. It was held that the carriage of the fruit by passenger train was of the essence of the contract; that after its transference from a passenger train to a goods train it was no longer being carried under the contract made with the plaintiff, and that consequently the defendants were not entitled to the benefit of the conditions of the consignment note relieving them from liability except upon proof of wilful misconduct.

Bothamley v. Jolly (84 L.J.K.B., 2223; [1915] 3 K.B., 425) was a case of sale of unsound meat. The appellants, a cattle dealer and butcher, sold a bullock suffering from tuberculosis to a butcher, knowing that he intended to use it for human food. The butcher slaughtered it and the flesh was then seized by an inspector and condemned by the justices, and the butcher was convicted and fined. The appellants were also prosecuted but it was held by the Court of King's Bench that they could not be convicted because they had not exposed the meat for sale. Mr. Justice Avory added that the article sold by the appellants, the bullock, was not the same thing as the article seized and condemned, the meat; therefore the appellants could not be convicted on that ground also.

5. *Fertilisers and Feeding Stuffs.* By Section 6, Sub-section 1 (a) of the Fertilisers and Feeding Stuffs Act, 1906 (6 Edw. 7, c. 27), a person who sells any article for use as food for cattle or poultry is liable to a penalty if he fails to give "the invoice required by this Act." By Section 1, Sub-section 2, this "in the case of any article artificially prepared otherwise than by being mixed, broken, ground, or chopped," is an invoice, stating what are the respective percentages (if any) of oil and albuminoids contained in the article. In *Kyle v. Jewers* (84 L.J.K.B., 255) the respondent sold greaves as food for poultry, and gave the buyer an invoice expressed as follows:—"Greaves, not less than 15 per cent. albuminoid and 2½ per cent. oil." On analysis it was found that the

greaves contained 51.75 per cent. albuminoids and 20.32 per cent. oil. It was held that the respondent had committed an offence against the Act, as instead of saying that the percentages of oil and albuminoids were so much he had only said that the greaves contained "not less than" certain percentages.

6. *Nuisance.* In *Attorney General v. Roe* (84 L.J., Ch. 322; [1915] 1 Ch. 235) it was held that there is a common law obligation on the possessor of land that has been subjected to excavation to keep it fenced off from any public place or right of way, whether the excavation was made before or after his possession began, and whether or not he is liable to his landlord, if he has a landlord. The defendant in the case owned and occupied land which was in fact a worked out quarry, and which immediately adjoined a public highway repairable by the inhabitants at large, the excavation having been made in 1865 by a prior owner of the land in order to quarry for limestone, the surfaces of the road and land having up to that time been on the same level. The person who made the excavation, in order to protect those using the road from danger and the road from obstruction, had built alongside the road a wall, the bottom of which rested on a ledge of limestone, left ungotten for the purpose, which served as a retaining wall for the subsoil of the road and as a fence wall above its surface. In 1913 part of the wall collapsed and fell into the quarry, and, in consequence, a considerable part of the subsoil of the road and its surface fell in. It was held that a mandatory order should be made against the defendant to abate the nuisance by restoring the road to its condition prior to the subsidence and by rebuilding the wall or providing some other reasonable fence between the road and the quarry.

In *Bainbridge v. Chertsey Urban Council* (84 L.J., Ch. 626) offensive smells from a sewage farm caused a nuisance. The plaintiffs, who were the owner and occupier of a dwelling house situated about eight hundred yards south-west of the sewage farm, were granted an injunction restraining the owners of the sewage farm from so conducting it as to cause offensive smells and vapours in the plaintiff's premises.

7. *Land Valuation and Duties.* By Section 17, Sub-section 5 of the Finance (1909-10) Act 1910 (10 Edw. 7, c. 8), undeveloped land duty is not chargeable upon agricultural land held at the passing of the Act under a tenancy created by a lease made before April 30, 1909, during the continuance of such tenancy, "Provided that where the landlord has power to determine the tenancy . . . the tenancy . . . shall not be deemed for the purpose of this provision to continue after the earliest date after the commencement of this Act at which it is possible to determine the tenancy." In *Inland Revenue*

Commissioners v. Southend-on-Sea Estates Co. (84 L.J.K.B., 154; [1915] A.C. 428) the House of Lords affirmed the decision of the Court of Appeal (noted in the article on "Contemporary Agricultural Law" in this Journal for 1914) that undeveloped land duty was not payable in the case of land held under a lease current on April 30, 1909, giving the landlords the right to resume possession of part of the land for building or other purposes before the determination of the lease, when the landlords have shown no intention or wish to resume possession for building or other purposes inconsistent with the use of the land for agricultural purposes under the lease, although the land has in fact a site value exceeding 50*l.* an acre and would be therefore otherwise subject to the duty.

In *Morrison v. Inland Revenue Commissioners* (84 L.J.K.B., 1166; [1915] 1 K.B. 716) a question arose as to the assessable site value of a Yorkshire farm 2,158 acres in extent, where the fields were divided by stone walls from 5 to 6 ft. high which served the double purpose of dividing up and bounding the land and providing a shelter for the stock on the farm. It was held that these walls were not "buildings" or "other structures . . . appurtenant to or used in connection with" farm buildings within Section 25 Sub-section 2 of the Finance (1909-10) Act, 1910, and consequently that the assessable site value of the land was not to be fixed as if the land was divested of these walls.

8. *Miscellaneous.* An important question as to the rights of the Crown was raised in *Re a Petition of Right of* (84 L.J.K.B., 1961; [1915] 3 K.B., 649). The Crown took possession of certain land after the war began on the ground that their possession and use was necessary for the public safety and the defence of the realm. The Crown was willing *ex gratia* to pay such reasonable sum to the owners by way of compensation as might be awarded by a Commission, but denied that there was any legal right to compensation. It was held that the Crown has power in time of war to requisition lands and buildings which are necessary for the defence of the realm without making any compensation therefor both under the King's prerogative and also under the Defence of the Realm (Consolidation) Act, 1914 (5 Geo. 5, c. 8).

Hailsham Cattle Market Co. v. Tolman (84 L.J., Ch., 607; [1915] 2 Ch., 1) was an action by a market company to prevent the infringement of their alleged rights by an auctioneer who sold cattle and live stock on land of his own within the market limits on days other than market days. Section 42 of the private Act which incorporated the market company provided that every person who should on the days appointed for holding markets sell or expose for sale at any place within the market

limits, "except on any land or in any building belonging to him or in his occupation," any animals in respect of which tolls were by the Act authorised to be taken should forfeit and pay to the market company any sum not exceeding 40s. unless he should have paid the tolls authorised to be taken by the Act. The defendant acquired lands within the market limits and there erected buildings in which he held auction sales of cattle and live stock on days other than market days. Notwithstanding the Markets and Fairs Clauses Act, 1847 (10 and 11 Vict., c. 14), which was incorporated in this private Act, and which by Section 13 forbids the sale by any person other than a licensed hawker within market limits of an established market, except in his own dwelling place or shop, of any article in respect of which tolls are taken, it was held that Section 42 of the Act establishing the market in question governed the case and afforded the market company their only protection. Therefore the defendant's acts taking place on days other than market days and on land and buildings in his own occupation were not in contravention of the plaintiffs' rights and he was at liberty to sell as he had done.

In *Thornhill v. Weeks* (No. 3) (84 L.J.K.B., 282; [1915] 1 Ch. 106) a district council becoming co-defendants in a right of way action and asserting in their pleading, in answer to a claim for a declaration by a landowner and his tenant that there was no such right, that a public right of way was neither claimed nor denied by them, but actively taking up the defence of the right of way, which was found by the Court not to exist, were made liable to pay the costs of the action.

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AGRICULTURAL STATISTICS, 1915.

[The Society is again indebted to the Board of Agriculture and Fisheries for their kindness in supplying, for inclusion in the Journal, the usual detailed and comparative tables of the latest agricultural statistics. For fuller information than can be given in the space available here, the Department's own admirable series of Reports on Agricultural Statistics, should, of course, be consulted.—ED.]

ACREAGE.

In Table I. will be found details of the acreage under crops and the numbers of live stock. It will be seen that the steady shrinkage during the last two decades in the area devoted to

agriculture in Great Britain' was continued in 1915, the total acreage under crops and grass having declined by over 65,000 acres since 1914. The persistent increase of **Permanent Grass** at the expense of arable land which has been so noticeable a feature of British agriculture for a number of years past, received, however, a check in 1915, the area under pasture declining by 28,000 acres, made up of 23,000 acres in England and 5,400 in Wales, against which there was a very slight set-off by an increase of 800 acres in Scotland. The loss in **Arable Land** consisted of 33,800 acres in England (as against the much heavier losses of 55,000 acres in 1914, and 235,000 acres in 1913) and 5,600 acres in Scotland. Wales, however, showed in proportion to its size, the satisfactory increase of 1,600 acres.

In considering the individual crops the main interest naturally lies in seeing how far farmers were able to arrange their cropping in accordance with war requirements. Notwithstanding the decline in the total area under the plough the acreage under the two chief cereals showed very considerable extension. The increase in **Wheat** in Great Britain as a whole was nearly 379,000 acres, being no less than a 20 per cent. gain on 1914, and the total area under the crop—2,247,000 acres—was the largest since 1891. As the chief wheat-growing portion of the United Kingdom, England contributed as much as 351,000 acres (an addition of 20 per cent. to her 1914 acreage) to the increase, the gains in Scotland (16,000 acres) and Wales (11,600 acres) being, however, relatively even larger (27 and 31 per cent. respectively). **Oats** similarly showed large increases—158,500 acres (9 per cent.) in England and 63,000 acres (7 per cent.) in Scotland (Wales remaining stationary) the total extension in Great Britain being about 8 per cent. Towards meeting the increases in wheat and oats, no less than 317,800 acres of **Barley** were displaced, the decline being 269,000 acres in England, 45,000 acres in Scotland and 4,000 acres in Wales, the total crop in Great Britain as a whole—1,380,000 acres—being the smallest on record.

Pulse crops also were reduced in the interests of wheat and oats, the area in England in 1915 under **Beans** and **Peas**, being 66,000 acres less than in the previous year—beans losing 27,000 acres (9 per cent.) and peas 39,000 acres (23 per cent.) the total area under the latter being by far the smallest ever returned.

Although **Potatoes** show a drop of over 6,000 acres for Great Britain as a whole, it must be remembered that the total

¹ Although for purposes of reference Tables I. and II. give details also for Ireland and the United Kingdom as a whole, exigencies of space make it necessary to restrict the review to Great Britain and more particularly to England and Wales.

area under this crop in 1914—614,000 acres—was unusually large (being in fact a record) and the acreage in 1915 was nearly 30,000 acres above the average of the preceding ten years. The drop was entirely in Scotland (8,000 acres), the area planted in England and Wales—463,000 acres—showing an increase of 2,000 acres.

Turning to root crops it will be observed that the "war cropping" affected them very adversely. Turnips and Swedes in Great Britain lost the very large area of 123,000 acres (8 per cent.) which marks a great acceleration in the gradual decline which has been overtaking these crops for the last forty years. The loss was made up of 113,000 acres (11 per cent.) in England and Wales and of 10,000 acres (3 per cent.) in Scotland. In losing 18,700 acres (4 per cent.) Mangolds in England and Wales failed to sustain the improvement of 1914 (when 13,000 acres were gained) and were the smallest crop for ten years past. Vetches and Tares also contributed to the simultaneous decline in arable land and the increase in wheat and oats, the area in Great Britain falling by nearly 15,000 acres.

The wastage in the area sown to Clover and Rotation Grasses which had been proceeding for the last ten years or so was again evinced in 1915, the total area as compared with 1914 being about 20,000 acres less in England and Wales and 18,000 acres less in Scotland. The loss in England and Wales, however, was only 0·8 per cent. as compared with the loss in 1914 over 1913 of $4\frac{1}{2}$ per cent. (over 110,000 acres).

Bare fallow showed a reduction of 31,000 acres for Great Britain as a whole, the total land thus dormant being just over 2 per cent. of the whole arable area.

LIVE STOCK.

The number of Horses in use for agricultural purposes (including breeding mares) in Great Britain in 1915 showed a continuation of the steady diminution which has been proceeding since 1910, there now being almost 280,000, (about 25 per cent.) less than in that year, the drop in 1915 being 68,800. From the point of view of the future supply of British horses it is unsatisfactory to note that the numbers of unbroken horses also again decreased, there being as compared with 1914, 11,000 ($4\frac{1}{2}$ per cent.) less of the category "one year and above" and over 3,000 (3 per cent.) less of those under 1 year old. Against this, however, England secured an increase of 205 in the number of stallions for service.

Cattle again showed a substantial increase, the numbers carried in Great Britain being 195,000 ($2\frac{3}{4}$ per cent.) more than in 1914 and giving a total larger than ever before recorded.

The increase, however, was not shared by all classes of stock, the number of cows and heifers somewhat receding from the unparalleled figures of 1914, which showed an increase of 242,600 on 1913, but even with the loss of 54,200 the number in the year under review comes second only to 1914 in being the largest ever known. The drop was confined to England and Scotland—Wales in fact increased its breeding herd by 1,600—England losing 25,700 dairy and 25,200 breeding animals, and Scotland 2,500 and 2,000 respectively. From the point of view, however, of the available home beef supply in 1916 it is noteworthy that each class of "other cattle" shared in the aggregate increase, the greatest gain being in beasts of one year and under two—the numbers of which in Great Britain improved by 145,000 (over 10 per cent.), the gain in England and Wales alone being 122,000. That the number of calves increased by 72,000 in England and Wales, and by nearly 4,000 in Scotland, is of special interest in view of the public attention directed to the alleged excessive slaughter of immature live-stock, although in this connection it must be borne in mind that a certain increase was to be expected in view of the specially large numbers of cows and heifers in calf in June, 1914.

The gain in the total head of Sheep in Great Britain, which was particularly noticeable in 1914, was continued in 1915, the figures in the latter year showing an advance of 313,000, which brings the total increase since the record low number of 1913 up to over 600,000. The improvement in 1914 had been confined to Scotland and Wales, but in 1915 it was shared also by England where the gain was 172,500 as compared with a fall of 84,000 in 1914. When, however, the details for the various categories are analysed it will be found that the prospects in England are not too promising, the gain being restricted to the animals of "one year and above," which was simply the natural sequence to the large increase in the number of lambs in that country in the previous year. Both the number of breeding ewes and the number of lambs fell off in 1915 (by 17,000 and 154,000 respectively) in marked contrast to the increases of 45,000 and 108,000 in these classes in 1914. Scotland and Wales, on the other hand, each increased its stock of breeding ewes, in the latter country the increase of 50,000 (over 3 per cent.) being both relatively and absolutely very large. Incidentally it may be remarked that the much greater attention paid to the production of Welsh mutton in the last twenty years is being well maintained, and although there had been a falling away from the high water mark of a total head in Wales of 3,795,000 in 1909, down to 3,394,000 in 1913, the numbers in subsequently reviving to the 3,698,000 of 1915 have reached a figure only exceeded in the three years 1907-9.

Unlike cattle and sheep, the total number of **Pigs** in Great Britain showed a falling off in 1915, although the figure of 2,579,000 is above the average of the previous five years (2,539,000). The loss was confined to England and Wales (61,000), where there had been a gain of nearly 380,000 in the previous year, the Scottish herds increasing by 6,000. Far the greater amount of the loss in England and Wales was in breeding sows of which 42,000 (over 12 per cent.) less were kept in 1915 than in 1914. Although increasing the total head of pigs, Scotland also reduced her breeding animals, the fall being nearly 2,000 (about 9 per cent.).

PRODUCE OF CROPS.

As was to be expected from the large increase in the acreage, the **Wheat** crop of Great Britain in 1915 (see Table II.) was exceptionally large, being in fact over 1,207,000 quarters (16 per cent.) more than even the bumper year of 1914, and was no less than 1,623,000 quarters (22.5 per cent.) above the average of the ten years 1905-14. Except for 1898 so large a crop has not been known for a quarter of a century. The farmers' efforts to increase the home supply of our fundamental food-stuff were, however, somewhat discounted by a slightly under-average yield per acre, that of England being about four-fifths of a bushel below the decennial average and nearly $1\frac{1}{2}$ bushels below the yield of 1914.

Barley, in declining to 5,156,000 quarters proved the smallest crop ever recorded in Great Britain, and was 1,940,000 quarters (over 27 per cent.) below that of the previous year (the crop of which was itself somewhat below the average). The decline was, of course, mainly caused by the shrinkage in the acreage, but it was seriously accentuated by the coincidence of a very poor yield per acre, which in England was nearly 4 bushels, and in Scotland $2\frac{1}{2}$ bushels below the ten-year average. Compared with the previous year the most striking difference was in Scotland, where the very inferior yield of 1915 followed immediately after the record high yield of 38 bushels which had been obtained in 1914, the difference in the two years being nearly $4\frac{1}{2}$ bushels.

A very satisfactory result was achieved with **Oats**, which relatively did even better than wheat, in the sense that in this case the larger acreage was (in Great Britain as a whole) attended by an over-average yield. The total crop came out at 1,100,000 quarters (nearly 8 per cent.) above 1914, and was the largest since 1909. England, by virtue of its large increase of 9 per cent. in acreage, provided the largest share of the additional crop, gaining 848,000 quarters, the yield per acre also showing an advance on 1914, although still slightly under

TABLE I.—Acreage under Crops and Grass; and Number of Livestock in Scotland, Great Britain, Ireland, and the United Kingdom.

	England		Wales		Scotland	
	1915	1914	1915	1914	1915	1914
	Acres		Acres		Acres	
Total Area (excluding water)	32,387,469		4,750,155		19,069,683	
Total Acreage under Crops and Grass ¹	24,310,744	24,367,509	2,742,356	2,746,495	4,781,397	4,786,104
Arable Land	10,272,673	10,306,467	693,054	691,787	3,289,902	3,295,457
Permanent Grass ²	14,038,071	14,061,042	2,049,322	2,054,708	1,491,495	1,490,647
Wheat	2,121,519	1,770,470	48,651	37,028	76,654	60,521
Barley or Bere	1,151,549	1,420,340	80,178	84,425	140,346	104,106
Oats	1,888,568	1,731,091	199,479	199,535	982,601	918,306
Rye	48,807	52,346	774	1,551	4,813	5,340
Beans	265,289	292,612	1,229	1,404	* 5,382	* 6,112
Peas	128,886	168,233	495	608	666	601
Potatoes	436,940	436,172	26,459	25,449	144,393	132,315
Turnips and Swedes	861,105	869,523	55,753	55,571	420,895	430,606
Mangold	402,262	421,336	11,461	11,031	2,568	1,127
Cabbage	49,480	31,407	731	777	4,809	5,005
Kohl-Rabi	17,944	15,680	51	80	10	10
Rape	60,862	64,773	4,668	5,688	6,290	8,734
Vetches or Tares	109,243	123,185	387	545	* 11,124	* 11,506
Lucerne	52,705	53,343	297	311	14	6
Hops	34,744	30,681	—	—	—	—
Small Fruit	73,274	76,351	913	1,027	7,054	7,271
Clover, Sainfoin, and Grasses under Rotation	2,101,761	2,121,511	260,604	258,810	1,463,988	1,481,906
Other Crops	144,445	147,207	1,465	1,418	2,299	2,501
Bare Fallow	305,200	335,208	4,159	5,629	6,974	7,225
Horses used for Agricultural purposes ³	No. 656,106	No. 712,743	No. 72,913	No. 78,554	No. 128,353	No. 135,593
Stallions ⁴	6,370	6,185	1,319	1,335	1,127	1,117
Unbroken ⁵ } One year and above	108,888	178,315	33,190	34,753	31,295	31,871
Horses } Under one year	80,522	82,289	18,720	19,817	13,293	13,006
Total	911,946	979,512	120,142	134,450	174,608	182,201
Other Horses	226,444	260,425	22,650	25,151	24,036	27,140
TOTAL OF HORSES	1,138,390	1,239,937	142,792	159,601	198,704	209,341
Cows and Heifers in milk	1,833,972	1,658,906	248,402	248,620	561,077	563,019
Cows in calf but not in milk	231,176	240,269	25,997	24,414	43,337	44,200
Heifers in calf	268,259	285,350	26,397	26,571	44,770	45,004
Other Cattle:—Two years and above	922,227	878,783	72,101	73,598	229,602	242,076
" " One year and under two	1,101,556	995,401	195,667	179,549	293,802	271,142
" " Under one year	1,123,457	1,060,096	214,643	205,747	251,336	247,739
TOTAL OF CATTLE	5,280,947	5,119,445	788,207	788,499	1,928,933	1,914,071
Ewes kept for Breeding	5,303,000	5,319,921	1,568,738	1,618,413	3,004,908	2,975,699
Other Sheep:—One year and above	2,738,152	2,415,106	723,495	736,445	1,219,490	1,198,363
" " Under one year	5,763,344	5,916,938	1,405,848	1,512,871	2,861,400	2,883,623
TOTAL OF SHEEP	13,824,496	13,651,965	3,698,081	3,867,729	7,075,798	7,058,691
Sows kept for Breeding	287,497	306,736	30,666	33,648	17,652	18,406
Other Pigs	1,932,958	1,953,215	182,770	187,882	141,405	133,339
TOTAL OF PIGS	2,206,585	2,259,951	213,442	221,530	159,057	151,745

¹ Not including Mountain and Heath Land.² Including Marcs kept for Breeding.³ Above two years old, used, or intended to be used, for service.⁴ Furnished by the Board of Agriculture for Scotland.⁵ Figures for Jersey include Water.

as returned on June 4, 1915 and 1914, in England, Wales,
and the Isle of Man and the Channel Islands).

	Great Britain		Ireland?		United Kingdom.	
	1915	1914	1915	1914	1915	1914
	Acres 56,207,247		Acres 20,248,060		Acres 76,455,290	
Land (excluding water)						
Under Crops and Grass	31,834,497	31,900,185	14,719,688	14,742,766	46,554,185	46,642,951
Land not under Crops and Grass	24,372,750	24,287,062	5,528,372	5,505,294	29,881,105	29,800,339
Land under Crops and Grass						
Land under Crops and Grass	14,255,609	14,293,741	4,998,903	5,027,082	19,254,512	19,320,823
Land under Crops and Grass	17,578,888	17,606,444	9,720,785	9,715,684	27,303,814	27,349,650
Land under Crops and Grass						
Land under Crops and Grass	2,246,824	1,868,019	80,630	26,913	2,327,454	1,894,932
Land under Crops and Grass	1,381,068	1,688,880	141,686	172,289	1,522,754	1,861,169
Land under Crops and Grass	3,070,648	2,849,206	1,088,061	1,026,758	4,158,709	3,875,964
Land under Crops and Grass	32,494	59,248	7,440	7,535	60,040	66,780
Land under Crops and Grass	271,807	200,138	1,032	1,336	273,143	201,474
Land under Crops and Grass	130,046	169,522	430	272	130,316	169,794
Land under Crops and Grass	607,792	613,939	594,467	583,069	1,192,261	1,197,008
Land under Crops and Grass	1,352,851	1,475,702	205,122	276,872	1,558,000	1,752,574
Land under Crops and Grass	416,236	434,291	82,728	81,570	498,964	515,863
Land under Crops and Grass	144,835	152,174	89,038	39,169	184,011	191,343
Land under Crops and Grass	120,754	135,290	2,635	2,157	123,397	137,447
Land under Crops and Grass	34,744	36,661	—	—	34,744	36,661
Land under Crops and Grass	81,241	84,629	15,885	10,000	97,126	94,629
Land under Crops and Grass	3,228,351	3,863,289	2,504,622	2,699,330	6,032,973	6,562,619
Land under Crops and Grass	201,225	204,805	78,976	81,822	280,201	286,627
Land under Crops and Grass	316,613	347,965	—	—	316,613	347,965
Land under Crops and Grass						
Land under Crops and Grass	No.	No.	No.	No.	No.	No.
Land under Crops and Grass	858,032	926,820	359,848	383,646	1,217,880	1,310,466
Land under Crops and Grass	242,180	253,572	79,970	96,790	332,150	350,362
Land under Crops and Grass	112,535	115,796	54,046	55,953	167,581	172,488
TOTAL OF HORSES	1,212,758	1,206,188	490,864	548,389	1,703,622	1,754,577
Land under Crops and Grass						
Land under Crops and Grass	2,883,606	2,937,923	1,593,092	1,638,929	4,476,698	4,576,852
Land under Crops and Grass	1,223,930	1,194,401	994,316	1,132,183	2,218,246	2,326,583
Land under Crops and Grass	1,591,025	1,440,382	1,065,028	1,141,461	2,656,514	2,508,068
Land under Crops and Grass	1,589,436	1,514,202	1,191,359	1,189,072	2,780,795	2,662,189
TOTAL OF CATTLE	7,288,087	7,082,618	4,843,786	5,051,645	12,131,873	12,134,263
Land under Crops and Grass						
Land under Crops and Grass	9,876,646	9,813,342	1,431,805	1,408,262	11,308,451	11,221,604
Land under Crops and Grass	4,701,137	4,318,534	689,609	719,377	5,390,746	5,037,911
Land under Crops and Grass	10,020,509	10,163,838	1,478,453	1,472,942	11,538,997	11,665,922
TOTAL OF SHEEP	24,598,375	24,285,514	3,600,067	3,600,581	28,198,442	27,886,095
Land under Crops and Grass						
Land under Crops and Grass	315,815	359,793	122,013	133,188	437,828	492,981
Land under Crops and Grass	2,263,209	2,274,456	1,063,236	1,172,450	3,326,445	3,446,937
TOTAL OF PIGS	2,579,084	2,634,249	1,205,249	1,305,638	3,784,333	3,940,287

figures for Ireland include Orchards.
figures for the Department of Agriculture and Technical Instruction for Ireland.
figures for Scotland relate only to Beans harvested as corn.
figures for Scotland include Beans, Mashum, &c., for Fodder.
Rabi was not separately distinguished in Scotland.

TABLE II.—Total Produce, Acreage, and Yield per Acre,
1915 and 1914, with the Average

Crops	Total Produce		Acreage		Yield per Acre		Average of the Ten Years 1905-1914
	1915	1914	1915	1914	1915	1914	
WHEAT.							
	Qrs.	Qrs.	Acres	Acres	Bush.	Bush.	Bush.
England	8,293,269	7,175,950	2,121,519	1,770,470	31·27	32·43	32·13
Wales	171,472	131,066	48,251	37,028	28·20	28·32	27·5
Scotland	369,911	320,102	76,653	60,521	33·61	42·31	40·6
GREAT BRITAIN	8,834,652	7,637,118	2,246,823	1,868,019	31·46	32·66	32·28
Ireland	404,605	176,903	86,530	36,913	37·42	38·34	36·9
UNITED KINGDOM	9,239,257	7,894,011	2,333,353	1,904,932	31·68	32·77	32·3
BARLEY ² .							
England	4,229,031	5,841,499	1,151,536	1,420,346	29·38	32·90	33·2
Wales	208,898	332,449	80,178	84,425	29·82	31·50	31·6
Scotland	628,160	922,925	148,443	194,106	33·63	38·04	36·1
GREAT BRITAIN	5,156,089	7,096,873	1,381,157	1,698,877	29·87	33·42	33·2
Ireland	708,194	908,965	141,586	172,280	30·00	44·99	42·8
UNITED KINGDOM	5,864,283	8,005,838	1,522,743	1,871,166	30·80	34·48	34·3
OATS.							
England	9,501,606	8,653,284	1,838,530	1,730,082	40·25	40·01	40·2
Wales	845,211	900,443	199,479	199,535	35·50	36·10	35·4
Scotland	4,885,178	4,818,650	982,569	919,880	39·77	40·18	37·9
GREAT BRITAIN	15,272,085	14,173,377	3,070,608	2,849,197	39·79	39·79	39·5
Ireland	7,036,298	6,490,960	1,088,664	1,028,758	51·71	50·48	49·0
UNITED KINGDOM	22,308,383	20,664,337	4,159,272	3,877,955	42·91	42·63	42·1
BEANS ¹ .							
England	891,098	1,079,369	256,655	283,194	27·78	30·49	30·1
Wales	3,601	4,333	1,030	1,177	27·46	29·45	27·3
Scotland	24,419	29,428	5,382	6,123	36·30	38·45	36·3
GREAT BRITAIN	919,118	1,113,130	263,037	290,494	27·95	30·65	30·1
Ireland	5,138	6,948	1,032	1,236	30·63	44·97	45·1
UNITED KINGDOM	924,256	1,120,078	264,069	291,730	28·00	30·72	30·2
PEAS ¹ .							
England	298,246	371,183	97,929	128,116	24·37	23·00	23·1
Wales	889	1,204	336	412	22·96	23·36	22·4
Scotland	405	586	127	193	26·51	24·27	24·2
GREAT BRITAIN	299,631	372,973	98,392	128,721	24·36	23·00	23·2
Ireland	707	1,065	180	272	31·42	31·32	28·8
UNITED KINGDOM	300,338	374,038	98,572	129,093	24·38	23·02	23·3

¹ The particulars for Ireland have been furnished by the Department of Agriculture and Technical Instruction for Ireland, and those for Scotland, by the Board of Agriculture for Scotland. No Produce Statistics are collected for the Channel Islands and Isle of Man.

² Including Bere.

³ Excluding a certain area returned as picked or cut green amounting to 8,896 in England and Wales in 1915.

*Each of the Principal Crops in the United Kingdom in
of the Ten Years 1905-1914.*

Crops—continued	Total Produce		Acreage		Yield per Acre		Average of the Ten Years 1905-1914
	1915	1914	1915	1914	1915	1914	
POTATOES.	Tons	Tons	Acres	Acres	Tons	Tons	Tons
England	2,702,181	2,807,255	436,940	436,172	618	644	622
Wales	155,932	145,854	26,458	26,449	589	573	581
Scotland	972,065	1,077,579	144,369	152,318	673	707	690
Great Britain	3,830,145	4,030,688	607,768	613,939	630	657	634
Ireland	3,710,063	3,445,770	594,467	583,009	624	591	607
UNITED KINGDOM	7,540,211	7,476,458	1,202,235	1,197,008	627	625	623
TURNIPS AND SWEDES.*							
England	11,068,406	12,598,826	878,196	988,869	1260	1277	1301
Wales	738,861	832,455	50,753	55,689	1456	1534	1524
Scotland	7,582,814	6,311,483	420,996	430,608	1789	1466	1649
Great Britain	19,340,071	19,762,264	1,349,915	1,475,046	1433	1542	1499
Ireland	5,091,694	4,133,491	265,122	276,872	1920	1601	1718
UNITED KINGDOM	24,431,765	24,195,755	1,615,037	1,749,918	1513	1383	1456
MANGOLD.*							
England	7,027,153	7,719,680	401,048	420,335	1902	1837	1946
Wales	286,927	199,087	11,461	11,031	1805	1805	1801
Scotland	55,671	42,080	2,508	1,927	2220	2184	1895
Great Britain	7,369,751	7,960,847	415,017	433,293	1901	1837	1942
Ireland	1,906,849	1,562,074	82,728	81,570	2184	1915	1942
UNITED KINGDOM	9,096,600	9,522,921	497,745	514,863	1918	1850	1941
HAY from CLOVER, SAINTFOIN, &c.					Cwt.	Cwt.	Cwt.
England	2,080,215	1,806,381	1,372,922	1,390,898	3030	2741	2885
Wales	207,488	210,756	185,145	164,009	2513	2570	2560
Scotland	543,627	629,169	390,104	406,254	2784	3082	3194
Great Britain	2,830,730	2,746,306	1,928,171	1,963,161	2938	2798	2849
Ireland	1,625,460	1,464,628	908,858	930,741	3731	3117	3524
UNITED KINGDOM	4,456,190	4,210,934	2,837,029	2,903,902	3191	2901	3206
HAY from PERMANENT GRASS.							
England	3,807,137	4,003,627	4,118,843	4,236,074	1848	2172	2362
Wales	491,897	541,714	532,768	546,377	1847	1994	2025
Scotland	222,246	240,315	154,682	156,082	2874	3068	2960
Great Britain	4,521,280	4,785,656	4,806,299	4,942,533	1881	2181	2346
Ireland	3,401,312	2,803,909	1,887,071	1,547,772	4286	3623	4369
UNITED KINGDOM	7,922,592	8,192,565	6,693,370	6,490,305	2478	2525	2827
HOPS.							
England	Cwt. 264,609	Cwt. 507,258	34,714	36,661	733	1384	973

* Excluding a certain area returned as picked or cut green amounting in 1915 to 118 acres in England and Wales and 588 acres in Scotland.

* Excluding certain areas on which the crops were grown for the production of seed, amounting to 2,692 acres of turnips and swedes and 1,214 acres of mangold in England and Wales in 1915.

* No Hops are grown in any other part of the United Kingdom.

TABLE III.—*Estimated Total Production of Hops in the Years 1915 and 1914, with the Acreage and Estimated Average Yield per Statute Acre, in each County of England in which Hops were grown.*

COUNTY.	Estimated total produce		Acreage returned on 4th June		Estimated average yield per acre	
	1915	1914	1915	1914	1915	1914
	Gwt.	Gwt.	Acres	Acres	Cwt.	Cwt.
East . . .	54,819	94,877	5,727	6,174	9.57	15.37
Mid. . .	68,869	104,406	7,238	7,604	9.51	13.71
Kent . . .	65,046	119,422	8,370	8,848	7.84	13.50
Total, Kent	188,334	318,704	21,335	22,626	8.87	14.59
Hants . . .	6,131	22,262	1,514	1,580	4.05	14.06
Hereford . . .	20,737	70,476	5,405	5,607	3.84	12.80
Surrey . . .	1,628	8,188	552	585	2.95	14.00
Sussex . . .	22,173	43,080	2,864	3,036	7.74	14.49
Worcester . . .	14,469	42,238	2,961	3,194	4.89	13.22
Other Counties ¹ . . .	137	1,408	113	133	1.21	10.50
Total . . .	254,609	507,268	34,744	36,661	7.33	13.81

¹ Gloucester, Salop and Stafford.

TABLE IV.—*Average Prices of British Corn per Imperial Quarter in England and Wales, as ascertained under the Corn Returns Act, 1882, in each Week of the Year 1915.*

Week ended	Wheat	Barley	Oats	Week ended	Wheat	Barley	Oats
	s. d.	s. d.	s. d.		s. d.	s. d.	s. d.
January 2 . . .	44 4	29 10	26 6	July 10 . . .	50 1	34 7	31 4
January 9 . . .	46 2	29 7	26 5	July 17 . . .	52 7	35 8	31 6
January 16 . . .	48 0	30 5	27 6	July 24 . . .	53 10	35 10	32 1
January 23 . . .	51 6	31 3	28 10	July 31 . . .	55 3	36 1	31 1
January 30 . . .	52 8	32 5	29 10	August 7 . . .	55 4	35 7	31 1
February 6 . . .	53 3	33 7	30 3	August 14 . . .	55 2	37 0	31 1
February 13 . . .	54 8	34 7	31 1	August 21 . . .	54 3	39 4	31 1
February 20 . . .	56 0	34 11	31 5	August 28 . . .	51 11	38 3	30 6
February 27 . . .	56 0	35 3	31 8	September 4 . . .	45 3	38 1	29 6
March 6 . . .	55 11	34 6	31 8	September 11 . . .	43 0	37 11	29 1
March 13 . . .	54 8	33 5	31 0	September 18 . . .	42 9	36 0	29 1
March 20 . . .	53 9	32 2	30 7	September 25 . . .	43 3	32 8	29 1
March 27 . . .	54 3	31 11	30 6	October 2 . . .	43 5	40 4	29 1
April 3 . . .	54 6	31 9	30 6	October 9 . . .	44 1	41 0	29 1
April 10 . . .	54 9	31 3	30 4	October 16 . . .	45 9	42 3	29 1
April 17 . . .	55 4	30 10	30 5	October 23 . . .	48 2	44 0	29 1
April 24 . . .	56 5	31 5	30 11	October 30 . . .	50 3	46 2	29 1
May 1 . . .	58 3	32 7	31 5	November 6 . . .	51 6	47 3	29 1
May 8 . . .	60 5	33 3	32 4	November 13 . . .	52 8	47 5	30 1
May 15 . . .	61 7	34 0	32 5	November 20 . . .	53 6	47 11	31 1
May 22 . . .	62 0	34 1	32 8	November 27 . . .	54 2	48 7	31 1
May 29 . . .	61 11	34 6	32 7	December 4 . . .	53 7	48 11	30 1
June 5 . . .	61 9	35 4	32 5	December 11 . . .	52 10	47 10	30 1
June 12 . . .	60 1	34 5	32 4	December 18 . . .	53 11	47 5	30 1
June 19 . . .	56 1	34 3	31 9	December 25 . . .	53 10	47 2	30 1
June 26 . . .	52 0	34 4	31 9	January 1 . . .	54 9	47 5	30 1
July 3 . . .	49 5	35 8	31 1				
				Average of year.	52 10	37 4	30 1

TABLE V.—*Annual Average Prices per Quarter and Total Quantities of British Corn returned as sold in the Towns in England and Wales making Returns under the Corn Returns Act, 1882, in the Years 1911–1915.*

Years	Wheat	Barley	Oats	Wheat	Barley	Oats
	s. d.	s. d.	s. d.	Qrs.	Qrs.	Qrs.
1911	31 8	27 3	18 10	3,140,257	3,123,986	858,341
1912	34 9	30 8	21 6	2,365,596	2,165,572	630,755
1913	31 8	27 3	19 1	2,511,297	2,918,930	639,298
1914	34 11	27 2	20 11	3,027,976	3,403,072	1,164,361
1915	52 10	37 4	30 2	3,225,198	2,552,128	1,181,480

TABLE VI.—*Annual and Septennial Average Prices per Bushel of British Corn in the Years 1911–1915, with the Value of £100 of Tithe Rent-charge.*

Years	Annual average price			Septennial average price			Value of tithe rent-charge of £100			
	Wheat	Barley	Oats	Wheat	Barley	Oats	Calculated on annual average		Calculated on septennial average	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	£	s. d.	£	s. d.
1911	3 11½	3 4½	2 4½	3 11½	3 1½	2 3½	75	18 6	72	14 2½
1912	4 4	3 10	2 8½	4 0½	3 3	2 4	85	8 7	74	11 9½
1913	3 11½	3 4½	2 4½	4 1	3 3½	2 4½	76	3 6½	75	16 4
1914	4 1½	3 4½	2 7½	4 2	3 4½	2 4½	80	16 8½	77	1 4½
1915	6 7½	4 8	3 9½	4 6½	3 6½	2 7½	116	7 2½	83	2 6½

TABLE VII.—*Average Prices of British Wool in each Year from 1895 to 1915 inclusive.*

Years	Leicester ¹	Half-bred ¹	Southdown ¹	Lincoln ²
	Per lb.	Per lb.	Per lb.	Per lb.
	d.	d.	d.	d.
1895	9½ to 10½	9½ to 11	9½ to 11½	12
1896	9½ " 11	9½ " 10½	9½ " 11½	11½
1897	8½ " 10	8½ " 9½	8½ " 10½	9½
1898	8 " 8½	7½ " 8½	8½ " 9½	8½
1899	7 " 8	7 " 8½	7½ " 11	8½
1900	6½ " 7½	6½ " 8½	8 " 12	7½
1901	5½ " 6	5½ " 9½	7½ " 9½	6½
1902	5 " 5½	5½ " 6½	7½ " 9½	6½
1903	6½ " 6½	7½ " 8	8½ " 11½	7½
1904	8 " 9½	9½ " 10½	9½ " 11½	10½
1905	11½ " 12	11½ " 12½	11½ " 13½	12½
1906	12½ " 13	13½ " 14½	14½ " 15½	14½
1907	12½ " 12½	12½ " 13½	13½ " 15	12½
1908	8½ " 8½	8½ " 10	11½ " 12½	8½
1909	8½ " 8½	10 " 11½	12½ " 13½	8½
1910	9½ " 9½	11½ " 12½	14 " 15	9½
1911	9½ " 10½	11½ " 12½	13½ " 14½	9½
1912	9½ " 10½	11½ " 12	13½ " 14½	10½
1913	11½ " 12½	13½ " 13½	14½ " 15½	12½
1914	12½ " 12½	13½ " 14½	15½ " 16½	12½
1915	17½ " 18½	19½ " 19½	20½ " 21½	17½

¹ Computed from the prices given in *The Economist* newspaper.² Extracted from "The Yorkshire Daily Observer Wool Tables."

TABLE VIII.—*Yearly Average Prices of Fat Stock* ¹⁹⁰⁶
Milking Cows in England and Wales during the Year
 1906 to 1915.

(Compiled from the Weekly Return of Market Prices.)

DESCRIPTION.	Quality	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915
FAT CATTLE:											
	per stone	per stone	per stone	per stone	per stone	per stone	per stone	per stone	per stone	per stone	per stone
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Pooled Scots	1	7 8	7 11	8 2	8 5	8 9	8 5	9 3	9 3	9 4	9 7
	2	7 4	7 7	7 9	7 11	8 3	7 11	8 8	8 9	8 11	8 12
Shorthorns	1	7 6	7 10	7 11	8 2	8 7	8 2	9 0	9 0	9 2	9 3
	2	6 11	7 2	7 3	7 5	7 9	7 5	8 1	8 3	8 5	8 7
Herefords	1	7 8	8 0	8 1	8 5	8 9	8 5	9 2	9 3	9 3	9 12
	2	7 2	7 5	7 7	7 8	8 1	7 8	8 5	8 7	8 8	8 12
Devons	1	7 10	8 2	8 3	8 5	8 9	8 4	9 0	9 2	9 2	9 12
	2	7 2	7 6	7 6	7 9	7 11	7 7	8 1	8 3	8 5	8 12
MILKING COWS:											
	per head	per head	per head	per head	per head	per head	per head	per head	per head	per head	per head
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Shorthorns	1	20 13	21 1	21 5	21 7	22 3	22 2	23 1	23 15	23 13	23 7
In Milk	2	17 9	17 17	18 2	17 18	18 9	18 7	18 8	19 15	19 15	21 5
Calvers	1	20 2	20 14	21 4	21 0	21 11	21 11	21 18	22 16	22 9	22 12
	2	16 19	17 11	18 2	17 16	18 5	18 0	18 2	19 4	18 19	20 7
Other Breeds—											
In Milk	1	17 18	19 15	19 1	18 13	18 12	19 2	19 2	20 16	21 0	21 0
	2	14 14	14 16	15 0	14 12	15 14	16 6	16 2	17 13	17 13	19 7
Calvers	1	14 11	14 5	14 8	14 11	16 1	14 12	16 9	16 9	17 4	19 4
	2	12 14	13 0	12 17	13 2	12 19	12 17	13 6	14 13	15 6	17 0
VEAL CALVES:											
	per lb.	per lb.	per lb.	per lb.	per lb.	per lb.	per lb.	per lb.	per lb.	per lb.	per lb.
	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
1	8	8	8 1	8 1	8 1	8 1	8 1	8 1	8 1	8 1	8 1
2	7 4	7 4	7 4	7 4	7 4	7 4	7 4	7 4	7 4	7 4	7 4
FAT SHEEP:											
Downs	1	8 1	9	8 1	7 4	8 1	7 4	8 1	8 1	8 1	8 1
	2	8	8 1	7 4	6 1	7 4	7	8	8 1	8 1	8 1
Longwools	1	8 1	8 1	7 4	6 1	7 4	7 4	8 1	9	9 1	10 1
	2	7 1	7 1	7	6	6 1	6 1	7 4	8	8 1	8 1
Crossbreds	1	8 1	9	8 1	7 4	8 1	7 4	8 1	8 1	8 1	8 1
	2	8 1	8 1	7 4	6 1	7 4	7	7 4	8 1	8 1	8 1
FAT PIGS:											
	per stone	per stone	per stone	per stone	per stone	per stone	per stone	per stone	per stone	per stone	per stone
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Bacon Pigs	1	6 11	6 3	6 2	7 1	7 10	6 8	7 4	8 5	7 10	8 9
	2	6 6	6 3	5 8	6 7	7 5	6 2	6 10	7 11	7 4	8 9
Porkers	1	7 6	7 2	6 7	7 6	8 4	7 3	7 8	8 11	8 4	9
	2	7 0	6 9	6 2	7 0	7 10	6 9	7 2	8 4	7 11	8 9

TABLE IX.—Quantities and Values of Imports of the principal Agricultural Commodities into the United Kingdom in the years 1913 to 1915..

Commodities	Quantities			Values		
	1913	1914	1915	1913	1914	1915
GRAIN AND MEAL	Cwt.	Cwt.	Cwt.	£	£	£
Wheat	105,876,102	103,936,713	83,681,800	42,849,173	44,731,079	57,313,171
Wheat meal and flour	11,978,153	10,060,223	10,469,170	6,347,771	5,549,448	8,314,733
Barley	22,439,248	16,044,422	12,290,485	8,077,100	5,990,312	6,927,857
Oats	18,162,693	14,156,715	13,619,100	5,671,957	4,674,447	8,488,530
Oatmeal, groats, rolled oats, &c.	868,877	609,092	830,481	607,791	502,938	578,686
Peas	1,978,315	983,894	1,109,453	1,006,735	546,470	872,907
Beans (other than Haricot)	1,540,405	1,441,559	1,142,810	568,189	502,928	534,139
Maize	49,154,853	39,040,747	48,566,400	13,769,793	11,760,912	18,887,373
Mace meal	491,827	232,469	247,396	182,413	78,895	112,571
MEAT						
Beef	9,901,082	9,677,810	10,148,731	18,874,346	21,365,523	36,367,349
Mutton	5,416,513	5,261,905	4,790,350	11,112,026	11,593,680	14,180,348
Pork (including Bacon and Ham)	6,447,746	7,059,254	8,384,847	22,162,627	21,951,845	31,748,719
Unsalted (in- cluding Rabbits)	1,512,889	1,582,751	1,688,170	3,160,359	3,311,377	3,967,683
Total Dead Meat	23,278,230	23,587,820	25,312,698	55,309,358	62,222,635	86,263,499
Butter	4,139,028	3,984,294	3,855,335	24,083,058	24,014,276	27,132,703
Cheese	2,297,340	2,433,894	2,726,942	7,935,039	7,966,162	11,113,849
Milk, Condensed	1,252,236	1,225,316	1,581,759	2,185,462	2,154,169	3,366,069
Eggs	No. of Gr. Bun.	No. of Gr. Bun.	No. of Gr. Bun.			
	21,579,950	17,901,895	10,247,960	9,390,692	8,032,600	8,122,570

(Continued from page 153.)

average. Scotland, which had experienced an exceptionally favourable year in 1914, although showing a small decline in average yield as compared with that year, produced nevertheless over $1\frac{1}{4}$ bushels per acre above the decennial average, and raised in 1915 a total crop greater by 266,000 quarters than in the previous year. With a slightly reduced acreage and a yield per acre smaller (although above average) by half a bushel than in 1914, the total production of oats in Wales fell by about 15,000 quarters.

As with barley, the shortage of Beans and Peas which was to be anticipated from the reduced areas planted, was aggravated by the yields also turning out much under average. In England, where practically the whole of these crops are grown, the total bean crop was 188,000 quarters (17 per cent.) less than in 1914, when, however, the crop had been larger than the

average of recent years, and 152,000 quarters less than the average of the past ten years, the yield per acre being about $2\frac{3}{4}$ bushels below 1914, and $2\frac{1}{4}$ below the decennial average. Peas, although recovering somewhat from the poor yield of 1914, were still 2 bushels per acre under average, and the total crop harvested in England was 73,000 quarters less even than the exceptionally low production of 1914, and as much as 40 per cent. (or over 200,000 quarters) below the average crop of the previous decade.

For Great Britain as a whole the total production of **Potatoes** in 1915, although showing a decline of 200,000 tons by comparison with the record result of 1914, was very satisfactory, being as much as 218,000 tons (over 6 per cent.) above the average of the previous ten years. With the exception of Wales, the yield was more than a quarter of a bushel below that of 1914. In Scotland, however, it was still well above average and somewhat minimised the rather considerable drop in acreage in that country. On the other hand, England, in returning an under-average yield, more than lost the benefit of the small increase in the acreage, and consequently by comparison with 1914, when the yield per acre was very good, experienced a loss in total production of 105,000 tons.

The contraction of 8 per cent. in the area under **Turnips** and **Swedes** in Great Britain was to a certain extent set off by the yield coming out at well over average, and being nearly 1 ton per acre above the poor yield of the previous year. As a result the total crop was only 2 per cent. (422,000 tons) below 1914, which, however, was a particularly bad year, and the 1915 production was over 2,400,000 tons (more than 10 per cent.) below the ten-year average (21,770,000 tons). The above-average yield for Great Britain as a whole was entirely due to the exceptionally good crop in Scotland, where the output per acre was over 3 tons above 1914, and nearly $1\frac{1}{2}$ above average. Scotland thus gaining altogether 1,221,000 tons over 1914 in spite of the reduced acreage. In England the under-average yield of 1914 was succeeded by a still more inferior yield in 1915, and this, combined with the largely restricted acreage, resulted in a loss of 1,530,000 on 1914. Wales also returned a yield considerably below average, losing altogether some 114,000 tons as compared with 1914.

The other main root crop, **Mangold**, similarly gave a much better yield per acre in 1915 than in 1914, but in the country as a whole and particularly in England (where by far the greater part is grown) the yield per acre was still below average. The reduction in acreage outweighed the improved yield and the total crop in Great Britain was 71,000 tons below 1914, being, however, a reduction of less than 1 per cent.

The yield of **Hay** from clover and rotation grasses proved very much better than the poor results of 1914, the average per acre in England being nearly 3 cwt. more than in that year and over 1 cwt. above average. The yield in both Wales and Scotland, though, fell not only below 1914 but also below average, that north of the Tweed, indeed, being one of the worst ever known. Hay from pasture suffered all round, the yield per acre in England being over 5 cwt. below average and over 3 cwt. below 1914, and with the exception of 1911 (18·2 cwt.) was the smallest for many years. Wales and Scotland likewise produced under-average yields, although relatively not so bad as in England. On balance the gain in Great Britain as a whole of 84,500 tons in the crop of hay from rotation grasses and clover was entirely nullified by the loss of 867,000 tons caused by the heavy drop in both the acreage and average yield of meadow hay, and the total production of all kinds of hay thus fell from 8,135,000 tons in 1914 to 7,352,000 tons in 1915, a difference of 783,000 tons (nearly 10 per cent.). This was the smallest crop in the last fourteen years, apart from the failure of 1911, and was 1,567,000 tons (nearly 18 per cent.) below the decennial average.

Hops in 1915, although suffering only a small reduction in acreage, gave a total production nearly 50 per cent. less than in the previous year, when, however, the out-turn per acre was exceptionally high. The average yield in 1915 was $2\frac{1}{2}$ cwt. below the average of the preceding decade, the total yield being 122,000 cwt. (30 per cent.) below the annual average in this period.

PRICES IN ENGLAND AND WALES.

Corn.—(Tables IV. and V.). The effect of the war on Wheat prices, which was comparatively small in the closing month of 1914, soon became apparent in 1915, and though prices in the first week or so were fairly quiet a persistent rise soon set in and by the middle of May the weekly average reached 62s. per quarter, the highest weekly price since that of 68s. 9d. in 1877. Although prices had fallen nearly 20s. by September, they rose again for the rest of the year, the average for the year as a whole being 52s. 10d., (the highest since 1877) an increase of 17s. 11d. on 1914, and 20s. 7d. on the average of the previous ten years. **Barley**, though the weekly prices did not vary so much as wheat, became proportionately much dearer at the close of the year, the price in December being over 17s. (or over 50 per cent.) dearer than in January. The average for the year, 37s. 4d., showed an advance of 10s. on 1914, and was the highest since 1878. Compared with other cereals, **Oats** were very steady, and the greatest range between

any two weeks in the year was only 6s. The yearly average, 30s. 2d., was 9s. 3d. above the previous year.

Tithe-rent owners found the steady rise that the improved prices of corn in recent years have caused in the value of tithe-rent charge, greatly enhanced by the war prices of 1915, and the value of tithe per nominal 100L., calculated on the septennial average of corn prices, has now reached 83L. 2s. 6½d. (see Table VI.) which represents an advance of 6L. 1s. 2½d. on last year, is the highest value since 1887 and is over 11% above the average of the preceding ten years.

Live Stock.—(Table VIII.). As was to be anticipated substantial increases were obtained in 1915 in the prices of all classes of live stock. **Fat Cattle** generally fetched about 2s. 6d. per stone more than in 1914, the increase varying from 2s. in the case of second quality Herefords up to 2s. 9d. in the case of first grade Devons.

Other classes of live animals although doing very well did not rise proportionately so much as fat cattle. **Milking Cows** fetched generally over 2L. more per head and there was a similar rise of over 10 per cent. in **Veal Calves**, which fetched about 1d. per lb. more than in 1914.

Sheep realised on the average nearly 1½d. per lb. more live weight, the improvement being about the same for each breed. With an average rise of 1s. 8d. per stone, **Pigs** fetched nearly a quarter as much again as in 1914, and thus gained almost as much in proportion as fat cattle. Prime bacon pigs did particularly well, improving by no less than 2s. 9d. per stone. The general rise in the value of pigs is specially noteworthy because in the war months of 1914 they had failed to share in the rise which was becoming marked for cattle and sheep, and in fact had ruled at lower prices than in the corresponding months of 1913.

Wool.—(Table VII.). Each of the principal varieties of British **Wool** realised exceptionally high prices in 1915, the average advance on 1914 ranging from 4½d. per lb. for Lincoln, and 5d. for Southdowns, to 5½d. for Leicesters and 5½d. for Half Breds.

IMPORTS.

(a) *Quantities.*

The insular position of the United Kingdom and the nation's large measure of dependence on oversea supplies for food make the returns of agricultural imports in a year of unbroken warfare of vital interest. From Table IX. it will be seen that on the whole imports in 1915 were remarkably well maintained, and in fact in some cases were increased, both as

compared with 1914, during the last few months of which, however, trade was being conducted under war conditions, and also as compared with the peace year of 1913. From the point of view of the supply of food for human consumption the only important decreases were in wheat and eggs. In both cases the curtailment of supplies was principally due to the inability of Russia to use her Mediterranean outlet, the total supplies from that country in 1915 of wheat being only 796,000 cwt. as against an average of nearly 14,000,000 cwt. per annum in the five years 1910-14, and of eggs only 3,074,000 great hundreds as against an average of 9,500,000 great hundreds. Wheat supplies also suffered by the failure of the 1914-15 crop in Australia, our imports from that colony in 1915 being only 184,000 cwt., as against an average of over 12,000,000 cwt. The receipts of wheat from the other principal sources—United States, Canada, India and the Argentine—were all well up to the normal and in the case of the first-named the grain supplies reached the enormous total of 41,650,000 cwt. which was 7,000,000 above the exceptionally large figures of 1913 and 1914. Compared with the five-year average, however, the total supplies of wheat from all outside sources showed a drop of nearly 16,000,000 cwt. (15 per cent.).

Supplies of flour were almost exactly normal, no loss being felt from Russia's handicap, as that country is quite a negligible factor from the milling point of view, and the absence of Australian supplies, (which, though relatively not large, generally average about 400,000 cwt.) being more than counteracted by increased shipments from the United States. Amongst other cereals the most striking change is that of the fall in the imports of **Barley**, which were 10,000,000 cwt. below the pre-war year of 1913, and 8,000,000 below average. Here again the effect of the cutting-off of Russian supplies is very evident, the average quantities from that source being 6,200,000 cwt. Apart from yearly fluctuations in crops of particular countries, the balance of the decreased total imports of barley may be entirely accounted for by the cessation of all Roumanian supplies of grain to the United Kingdom in 1915 (normal barley exports from Roumania to this country being over 2,500,000 cwt.) and by the fact that the participation of Turkey in the war resulted in our receiving only 337,000 cwt. as against a usual 2,370,000 cwt. from that Empire.

In spite of the absence of the usual $2\frac{1}{2}$ million cwt. from Germany, $4\frac{1}{2}$ million from Russia, and half a million from Roumania, the total supplies of **Oats** to the United Kingdom in 1915 were only just over $1\frac{1}{2}$ million cwt. below average (and were in fact a similar amount above 1914). That the losses were so well made up was entirely due to the heavy shipments

from the United States, which sent us a total of over 8 million cwt., being 5 million in excess of the specially large quantity in 1914 and nearly 7 million above normal.

Arrivals of the other main cereal, **Maize**, although slightly below 1913, were over 9,000,000 cwt. above 1914 and actually totalled 7,000,000 cwt. (17 per cent.) above normal. The largest source of our supply of this grain is Argentina from whence we received in 1915 no less than 44,152,000 cwt. (or over 90 per cent. of our total supply), which was 20,000,000 above the quinquennial average. These heavy arrivals completely compensated for the absence of our important share in the Roumanian crop and for the short supplies from the United States.

Meat.—Imports of dead meat in 1915, despite the very abnormal conditions of the trade, showed a continuation of the progressive increase which has been taking place in our overseas supplies ever since the refrigerated trade started. The upheaval in the wholesale and retail distributing trades occasioned by the ear-marking of vast quantities of frozen meat for the Forces, and its effect on the trade in home-killed meat can hardly be discussed within the limits of this paper. In reaching nearly 10½ million cwt. our imported supplies of frozen, chilled and other preserved Beef are practically double what they were ten or twelve years ago, but it must be remembered that the actual increase in the total imports of beef is by no means so large, a large proportion of beef having formerly reached our shores as live cattle, the imports of which have declined from an annual supply of about 500,000 beasts a decade ago to nothing in 1915. The increase in total beef (live and dead) has, however, been nearly 2 million cwt. in that period. Of the 10½ million cwt. received in 1915, over half came from Argentina and about a tenth each from Australia and the United States of America.

Mutton arrivals were some 470,000 cwt. less than in 1914, and were the smallest total since 1908, the average since which had been over 5,300,000 cwt. The drop was principally in shipments from the Argentine, which fell to about 780,000 cwt. in 1915, as against over 1,100,000 in 1914. Australian supplies (1,280,000 cwt.) though less than in the two previous years were well up to average, and New Zealand mutton, with 2,400,000 cwt. maintained its recent steady advance.

The large increase of 1,325,000 cwt. in the imports of the various kinds of **Pork** brought the total in 1915 up to more than 2,000,000 cwt. beyond the average of the last five years. The great improvement as compared with 1914 was principally due to very heavy arrivals from the United States which more than compensated for the great falling off in Dutch and Danish supplies. Of the 6,523,000 cwt. of **Bacon** received in 1915, the

United States of America contributed over 3½ million (against 1½ million in 1914) as compared with a decline in Danish shipments from 2,700,000 cwt. in 1914 to 2,060,000 in 1915. As our largest supplier of **Hams**, the United States of America sent 1,360,000 cwt. (against 774,000 in 1914) of the total from all sources of 1,480,000 cwt. (against 839,000 in 1914). Practically our only source of imported **Fresh Pork** is Holland, from whence in 1915 we received 137,692 cwt. (of the total supply of 137,738), against 817,736 cwt. (of the total 841,739) in 1914.

Butter imports, as in 1914, slightly declined, and in 1915 were about 296,000 cwt. below the average in 1910-14. The decrease in 1915 was mainly occasioned by a considerable falling off in supplies from Denmark, Holland and Sweden, the supply from the first-named being only 1,327,000 cwt. as against an average of over 1,700,000 cwt., from the second 130,000 cwt., as against an average of 330,000, and from the last, 45,000 cwt., against 140,000. Another important purveyor of butter to the United Kingdom, however, Russia, succeeded in sending us (through the northern ports), 1,017,000 cwt., as compared with only 616,000 cwt. in 1914, and an average of 650,000 cwt. Australian supplies fell to 372,000 cwt. (against 438,000 cwt. in 1914), whereas New Zealand sent 375,000 cwt. as compared with 358,000 and 252,000 cwt. in 1914 and 1913 respectively.

In connection with the supply of butter it is interesting to note that the fillip given to its formidable rival, margarine, by the war, is evidenced by the increase of imports (apart from home manufactures) of that commodity from an average of 1,500,000 cwt. in 1913 and 1914 to over 2,000,000 cwt. in 1915.

Cheese imports in 1915 were highly satisfactory, being nearly 300,000 cwt. more than in 1914 and over 350,000 above the average of the last five years. The principal changes as compared with 1914 in the proportions received from the various sources were a drop in the case of Holland from 349,000 cwt. to 129,000 cwt. in 1915, which, however, was completely counter-balanced by supplies from the United States of America rising from 31,000 cwt. to 460,000, and those from Canada from 1,168,000 cwt. to 1,315,000.

Imports of fresh **Milk**, never very large, were nil in 1915. Supplies of condensed rose very considerably, being 360,000 cwt. above those in 1914 and about 400,000 cwt. above the average of the last five years. Particulars have not yet been published of the countries of shipment in 1915, so it is not possible to say how far our principal contributors, Holland and Switzerland, and to a smaller extent, Norway and Denmark, were concerned in the increase.

As already pointed out a great part of the decline in supplies of foreign **Eggs** is due to lessened exports from Russia, only

3,071,000 great hundreds being received from thence as against 6,870,000 great hundreds in 1914 (when these supplies were already affected by the war) and an average in 1911 to 1913 of over 10,000,000 great hundreds. Danish supplies also fell off, being only 2,658,000 great hundreds as compared with 4,316,000 in 1914 and an average of about 4,000,000 great hundreds. A difference was also felt by the absence of all supplies from the Central Powers, Austria-Hungary usually sending us about a million great hundreds and Germany over half a million. Altogether we received in 1915 very little more than half the number of foreign eggs that we did in each of the pre-war years 1911-13.

(b) *Values.*

Considerations of space preclude a detailed discussion of the value of the imports, but a few points of special interest may be noted. Altogether, in spite of reduced supplies of certain articles, we spent in 1915 no less than 235,000,000*l.* on imported agricultural produce (as detailed in Table IX., and excluding vegetables, fruit, &c.), against an average in the pre-war years 1911-13 of 163,000,000*l.* On external supplies of **Grain and Meal** alone our expenditure was 101,000,000*l.* for 179,000,000 cwt., although an annual supply of 205,000,000 cwt. in the pre-war years cost only 78,000,000*l.* As compared with 1911-13, the average values per quarter (at port of landing) rose in the case of **Wheat** from 3*s.* 3*d.* to 5*s.* 5*d.*, **Barley** from 2*s.* 11*d.* to 3*s.*, **Oats** from 1*s.* 9*d.* to 3*s.* 3*d.* and **Maize** from 2*s.* 10*d.* to 3*s.* 4*d.* Although spending 86,000,000*l.* on imported **Meat** as compared with an average of 50,000,000*l.* the United Kingdom received in 1915 an addition of only 3,240,000 cwt. to the average supplies of 22,070,000 cwt., the average values per cwt. having increased as regards beef from 3*s.* to 6*s.* 7*d.*, mutton from 3*s.* 8*d.* to 5*s.* 2*d.*, and pork 6*s.* 5*d.* to 7*s.* 9*d.* For the 3,000,000*l.* extra paid for foreign and colonial **Butter** in 1915 we received only 3,850,000 cwt., against 4,100,000 cwt. in the period 1911-13, the average cost per cwt. having risen from 5*l.* 1*s.* 5*d.* to 7*l.* 0*s.* 3*d.* The bill for imported **Cheese** increased from the normal 7,000,000*l.* to over 11,000,000*l.* The quantities received, however, although heavier rose in the much smaller ratio of 2,300,000 cwt. to 2,700,000 cwt. with the result that the average value per cwt. in 1915, was 8*l.* 6*d.* against only 6*s.* 1*d.* before the war. The expenditure on **Condensed Milk** in 1915 (3,366,000*l.*) was 50 per cent. greater than in normal times (2,100,000*l.*), supplies being only about 30 per cent. greater (1,580,000 cwt. against an average of 1,210,000 in 1911-13). In the case of **Condensed Milk**, however, the average value did not rise so much in

proportion as most other commodities, that for 1915 at 42s. 6d. per cwt. being only about 7s. above normal. The great reduction in the supplies of foreign Eggs quite outweighed the increase in the average value (11s. 11d. per great hundred in 1915 against the usual 8s. 8d.), and the total annual expenditure under this head fell from 9,000,000*l.* in peace times to 6,000,000*l.* in 1915.

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THE WEATHER OF THE PAST AGRICULTURAL YEAR.

A SUCCESSION of adverse weather influences resulted last year in a yield of crops mostly below the average, the deficiency being especially noticeable in the hop-growing districts. Owing in all probability to the dry autumn of 1914 (a factor of recognised importance in the growth of wheat), the most important cereal of the year compared favourably with nearly all other crops, and was, upon the whole, equal to, or even a trifle above, the normal. The favourable autumn weather was followed by an extraordinarily wet winter, and for many weeks the soil was too soddened to permit of active work. As an example of the climatic extremes to which the English farmer is subject, the spring proved all too dry, and by the close of the season rain was greatly needed for the pastures, which presented in most districts a miserably stunted appearance. The showers which followed came too late to ensure anything more than a scanty crop of hay, and sharp night frosts occurring, not only in May, but as late even as the third week in June, added appreciably to the anxieties of the farmer and market gardener. The summer, and more particularly the months of July and August, were distinguished by much changeable weather and by an unusual prevalence of thunderstorms, the accompanying falls of rain and hail being in many instances sufficiently heavy to lay the crops and to cause much damage in orchards and hop gardens. The harvesting time was marked very fortunately by better weather, and another dry autumn in 1915 gave a favourable start to the ensuing agricultural season. At the time of writing the prospects for 1916 were undoubtedly more auspicious than those afforded a twelvemonth earlier.

THE WINTER OF 1914-15.

The winter of 1914-15 was upon the whole mild, stormy, and exceedingly wet. From a careful and exhaustive report

which was read in May last before the Royal Meteorological Society¹ by Dr. H. R. Mill, the Director of the British Rainfall Organisation, we gather that over England and Wales generally the total rainfall for the four months commencing with November, 1914, though very little heavier than in the corresponding period of 1876-77 was, as a matter of fact, greater than in any winter of the previous fifty-five years. The only other four consecutive winter months with anything like so large a fall were those of October, 1911, to January, 1912, when the excess of rain over the country generally amounted to 33 per cent., as against 61 per cent. in 1876-77, and 67 per cent. in 1914-15. Owing very largely to the record rainfall of December, 1914, a considerable portion of the eastern, midland and south-eastern counties experienced early in January floods of unusual magnitude, the Thames Valley being affected more seriously than in any of the thirty-one years for which precise records were available. In so mild a winter frost and snow were naturally very rare, and seldom lasted for more than three or four days at a stretch.

Early in December, and for considerably more than a fortnight, the weather was mild and rough, a severe gale from the South and South-West being experienced on the 3rd and 4th of the month, and an almost equally severe gale from East and South-East between the 10th and 13th. The heaviest rains occurred (1) on December 3 over the northern parts of England and Wales; (2) on December 9 over the entire southern half of the country; (3) on December 11 and 12 mainly in the north; and (4) on December 17 in all the western and south-western districts. On December 9 between an inch and a half and two inches fell over a very considerable part of the southern counties, as much as two and a half inches in the Isle of Wight, and nearly two and three quarter inches at Petersfield. Shortly before Christmas the weather quieted down, and a sharp frost set in over the northern half of the country, the sheltered thermometer falling below 20° in several places, and reaching on Christmas morning, a minimum of 13° at Wellington, in Shropshire. On Boxing Day the influx of a strong Southerly wind resulted in a renewal of mild rainy weather, and on December 28, when a cyclonic disturbance travelled across the south of England, a strong gale was experienced from the South-West, and afterwards from North-West. The South-Westerly gale was accompanied by torrents of rain over the midland and southern counties (more than an inch and a half in places, and nearly two inches at Great Abingdon, in Cambridgeshire) while the cold North-Westerly wind in the rear of the disturbance

¹ *Quarterly Journal Royal Meteorological Society*, Vol. XLI., pp. 253-252

brought with it a fall of wet clinging snow which caused in some southern districts the overthrow of trees and extensive structural damage.

In the earlier half of January the weather was again mild and very wet, the thermometer on the 13th exceeding 55° in many places and touching 60° at Torquay. The most notable downpours of rain occurred on January 3, when amounts varying between an inch and a half and two inches were reported in many parts of the midland and southern counties, and more than two and a quarter inches at Mildenhall, in Suffolk; on January 10 around Snowdon and in the Peak district; and on January 15, mainly in the western and northern parts of the country. After the middle of the month a spell of cold Northerly and North-Westerly winds set in, and on the 22nd, when a storm system passed from the Netherlands to the English Channel, a heavy fall of snow was experienced over the whole of our south-eastern counties. In many places the ground was for a time covered to a depth of 8 or 10 in., and at Lewisham and Waringham to a depth of about 12 in. The snowstorm was followed in the same districts by a very keen frost, the sheltered thermometer early on the 23rd sinking to 15° at Copdock and Chelmsford, to 14° in several other parts of Essex, and to 13° at Matfield. In the south-east of England this frost, though short lived, was undoubtedly the sharpest of the whole winter.

February opened with a week of mild weather, heavy rain being experienced in the south of England on the 5th and in Wales and the south-western districts generally on the 7th. The conditions afterwards became rather more seasonable, but no frost worthy of note occurred until the closing week, when the thermometer fell below 20° in several places, and reached 15° at Marlborough. A very heavy downpour of rain occurred in South Wales and the south-west of England on February 16, the fall in twenty-four hours amounting to over 3 in. at Sheepstor, on the edge of Dartmoor, to $3\frac{1}{2}$ in. at Treherbert, in the Taff Valley, and to more than $3\frac{3}{4}$ in. at Princetown. A week later many districts experienced a snowstorm of considerable severity; the depth on the ground being as great as 6 in. at Harrow and Mildenhall.

For the winter as a whole the mean temperature was above the normal in all but the south-western districts, where there was a slight deficiency of warmth. Rainfall was, as we have remarked, enormously in excess of the average, the aggregate for the three months December to February being more than twice as much in the east of England, and more than two and a half times as much in the south-eastern counties. Bright sunshine was equal to the average in the Midlands and rather

in excess in the western districts. In all other parts of the country there was a deficiency in the duration of this very desirable element.

THE SPRING OF 1915.

An abnormally wet winter was followed, most providentially, by a marked improvement in the weather, and although the process was slow, the soil eventually recovered from the terribly soddened state in which it had lain for so many weeks. In other respects the spring maintained its proverbially field reputation, the farmer being often encouraged by substantial periods of warm sunshine, but at other times depressed by cold winds and by the touches of sharp night frost which form so common a feature in an ordinary English spring.

The early part of March was changeable but fairly mild and between the 12th and 14th the thermometer in many parts of England rose, for the first time in the year, to a trifle above 60°. After the middle of the month a spell of cold Northerly and North-Westerly winds set in, and on the 18th and 19th a considerable fall of snow was experienced in most of the northern and eastern districts. In several localities 6 or 7 in. was reported on the level, while in drifts a depth of 4 ft. was reached at West Witton, in North Yorkshire, and nearly 5 ft. at Macclesfield. The snowstorm was succeeded by a sharp frost, the sheltered thermometer falling early on the 19th or 20th to at least 10° below the freezing point in many districts to 18° at Llangammarch Wells, in Central Wales, and to 17° at Garforth, in West Yorks.

April was for the most part cool and dry, but few places experienced frost of sufficient intensity to cause any serious injury to the young crops. Towards the close of the month the thermometer rose decidedly, and on the 30th a shade reading of 70° or a trifle more was registered in several parts of England, one or two places in the south-eastern counties reporting temperatures very little below 75°. After the 8th of the month a drought lasting several days occurred in many localities in the south and east.

May proved as changeable as ever, and between the 5th and 7th of the month thunderstorms of considerable severity were experienced in many districts. In the northern and central parts of London the storm of the 6th was accompanied by an exceedingly heavy fall of rain; at Clerkenwell, the downpour in an hour and a half, between 8.30 p.m. and 10 p.m., amounted to over 3 in., one of the heaviest falls ever recorded in the Metropolis. Towards the middle of the month the cold snap which rarely fails to visit us at this period of the year duly made its appearance. The decrease in temperature was

preceded on the 12th and 13th by heavy rains over southern England, the fall of the 13th amounting to more than an inch and a half in several places, and to rather more than 2 in. in central Sussex. In some parts of the midland and northern counties a slight fall of snow occurred on the same day, and on the ensuing night a sharp frost in the north caused some damage to vegetation, the thermometer at Leyland, in North Lancashire, falling to 25° in the screen and to 20° on the grass. On the 17th and 18th another heavy fall of rain occurred over southern England (about 2 in. in and around Tunbridge Wells), but after this many places in the same districts experienced a prolonged drought lasting until about the third week in June. Between the 21st and 26th the weather was not only dry but seasonably warm, the thermometer rising slightly above 75° in several parts of the country. At the close of the month a couple of sharp night frosts caused some injury to the crops in a few scattered places.

For the spring as a whole the mean temperature was slightly below the average. Rainfall also showed a fairly general deficiency, but owing to the heavy downpours just mentioned, the total amount in the south-east of England was a little in excess of the normal. Bright sunshine was more abundant than usual excepting in the south-western district, where the amount agreed very closely with the average, and in the Channel Islands, where there was a rather large deficit.

THE SUMMER OF 1915.

A few substantial spells of fine dry weather failed to atone completely for climatic variations of an entirely opposite character, and the summer of 1915 must therefore be pronounced as upon the whole cool and very changeable. One of the most striking features in connection with the season was the unusual prevalence of thundery weather, the storms being accompanied in many instances by torrential falls of rain or hail. At a number of places in England the days affected amounted to at least double the average, and in some few localities (such for example as Cambridge and Worksop), thunderstorms were more numerous than in any summer of the previous thirty-five years.

The season opened with a prolongation of the dry weather which had set in at about the close of the third week in May. In many parts of southern England this lasted for over a month, Bifton, Bristol, reporting a drought of 33 days, Dover 37 days, and Eldham as many as 39 days. As a rule the thermometer was below rather than above its average level, but from June 4 to 10 a short spell of warmth set in, reaching its climax on or about June 8, when shade temperatures of 85° and upwards

(Continued on page 176.)

*Rainfall, Temperature, and Bright Sunshine experienced over
England and Wales during the whole of 1915, with Average
and Extreme Values for Previous Years.*

RAINFALL									
TOTAL FALL					NO. OF DAYS WITH RAIN				
For 49 years, 1866-1914					For 34 years, 1881-1914				
Districts	In 1915	Aver- age	Extremes		In 1915	Aver- age	Extremes		
			Driest	Wettest			Smallest	Largest	
North-eastern	In. 267	In. 295	In. (1884) 192	In. (1872) 372	181	186	162 (1884)	208 (1884)	
Eastern	287	249	191 (1874 and 1887)	331 (1872)	188	181	156 (1898)	205 (1894)	
Midland	300	275	192 (1887)	308 (1872)	186	179	148 (1889)	210 (1882)	
South-eastern	348	289	215 (1887)	417 (1872)	158	174	137 (1899)	197 (1888 and 1903)	
North-western with North Wales	336	377	249 (1887)	502 (1872)	174	200	163 (1887)	226 (1905)	
South-western with South Wales	439	417	283 (1887)	686 (1872)	191	200	159 (1887)	235 (1882)	
Channel Islands ¹	373	329	262 (1887)	478 (1910)	186	210	169 (1899)	251 (1886)	

MEAN TEMPERATURE									
For 49 years, 1866-1914					HOURS OF BRIGHT SUNSHINE				
Districts	In 1915	Aver- age	Extremes		In 1915	Aver- age	Extremes		
			Coldest	Warmest			Cloudiest	Sunniest	
North-eastern	47.2	47.6	44.8 (1879)	49.0 (1898)	1472	1339	1006 (1885)	1601 (1906)	
Eastern	48.6	48.6	45.6 (1879)	51.9 (1868)	1760	1582	1267 (1888)	1864 (1899)	
Midland	47.6	48.2	45.6 (1879)	51.1 (1868)	1416	1339	1156 (1912)	1715 (1899)	
South-eastern	49.3	49.8	46.7 (1879)	51.4 (1898)	1572	1619	1245 (1888)	1983 (1899)	
North-western with North Wales	47.7	48.5	45.7 (1879)	50.3 (1868)	1558	1402	1198 (1888)	1682 (1901)	
South-western with South Wales	49.0	49.9	48.1 (1888)	52.8 (1868)	1573	1633	1294 (1912)	1964 (1893)	
Channel Islands ¹	51.5	52.2	50.7 (1885)	54.3 (1899)	1769	1880	1636 (1913)	2300 (1891)	

NOTE.—The above Table is compiled from information given in the Weekly Weather Report of the Meteorological Office.

¹ For the Channel Islands the "Averages" and "Extremes" of Rainfall and Mean Temperature are for the thirty-four years, 1881-1914.

The Rainfall of 1915 and of the previous Ten Years, with the Average Annual Fall for a long period, as observed at thirty-eight stations situated in various parts of the United Kingdom.

Stations	1915		Rainfall of Previous Years												Average rain- fall	
	Total rain- fall	Dif- ference from ave- rage														
			1911	1913	1912	1911	1910	1909	1908	1907	1906	1905				
ENGLAND AND WALES:																
	In.	Per cent.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.		
Burham	260	- 3	259	231	292	230	249	248	194	248	238	192	238			
York	246	- 2	263	265	330	251	246	248	218	266	228	207	251			
Norwich	300	+11	276	214	330	267	318	278	252	263	286	270	271			
Yarmouth	324	+30	272	226	336	304	285	242	225	219	280	226	253			
Cardiff	241	+ 7	233	187	273	190	228	291	176	212	224	190	226			
Birmingham	304	+17	274	250	336	276	297	268	234	253	268	218	277			
Nottingham	269	+ 9	246	223	301	194	247	252	213	235	218	186	246			
Chester	315	+ 6	377	312	389	238	266	377	333	319	343	267	326			
Hereford	322	+22	272	206	339	254	264	240	239	297	256	210	304			
Exeter	320	+11	275	267	347	245	341	292	242	266	245	278	270			
Oxford	315	+25	265	252	325	209	289	275	239	269	240	210	252			
London (Kew)	329	+37	271	249	280	231	255	237	222	238	236	226	240			
Hastings	321	+11	300	307	320	296	289	314	226	233	287	269	288			
Southampton	310	+34	370	320	373	304	336	361	278	308	351	262	311			
Southport	321	+ 0	361	321	341	342	333	408	483	500	497	368	472			
Manchester (City)	338	- 3	353	268	406	311	375	370	325	330	370	298	347			
Liverpool	268	- 7	260	259	302	253	286	284	289	266	281	240	288			
Cardiff	332	+ 7	313	318	330	305	307	320	308	263	316	261	309			
Penrhy	302	+13	361	315	410	360	359	351	385	372	425	232	365			
Glasgow	375	+ 9	307	310	447	280	324	368	266	343	361	250	345			
Colington	400	+14	419	374	478	350	468	344	275	334	339	281	351			
Plymouth	437	+22	459	365	470	376	443	372	310	363	334	305	369			
St. Mary's	338	+ 2	343	348	365	342	306	270	247	203	298	275	331			
Jersey (St. Aubin's)	359	+ 6	381	265	433	317	444	317	252	286	252	303	339			
Mean for the whole of England and Wales	334	+12	334	290	368	288	345	313	266	299	299	256	297			
SCOTLAND:																
Stornoway	460	- 5	609	470	547	483	530	462	526	438	422	507	498			
Wick	254	-11	287	246	325	274	235	336	220	296	332	323	296			
Aberdeen	324	+ 6	287	238	293	275	277	304	280	287	315	285	307			
Edinburgh	386	+ 8	307	312	383	299	375	308	262	318	391	285	366			
Leith	259	+ 7	211	179	253	199	258	271	221	307	302	192	212			
Montrose	336	- 2	291	261	319	317	289	312	307	333	349	274	343			
Port Augustus	329	-26	424	455	693	448	422	373	439	420	516	336	444			
Glasgow	399	-20	361	362	410	363	392	393	338	420	491	397	388			
Mean for the whole of Scotland	385	-12	385	404	359	417	432	418	431	445	463	414	438			
IRELAND:																
Drogheda	362	+ 7	350	377	447	363	406	397	387	381	362	318	341			
Blackrock Castle	466	+ 9	473	457	491	423	535	497	473	452	449	390	428			
Armagh	292	- 8	331	351	378	276	325	283	331	316	361	299	319			
Belmullet	336	+20	265	288	277	259	354	269	238	270	228	253	279			
Barr Castle (Parsons)																
Down	334	+ 1	326	354	345	310	342	296	334	339	326	257	330			
Kilkeny	328	- 1	324	351	364	363	374	301	339	324	287	230	330			
Mean for the whole of Ireland	368	- 1	368	419	410	365	410	353	392	397	367	346	393			

The Average Fall is in nearly all cases deduced from observations extending over the above years 1876-1910.

The Mean Rainfall for each country is based upon observations made at a large number of stations in addition to those given above.

The figures for the years prior to 1906 are for Braemar.

[Continued from page 175.]

were recorded in many districts. At Cromer and Norwich the thermometer on the 8th touched 90°, and over the country generally the day proved the hottest of the whole summer. In the latter part of the month the weather turned much cooler, and early on the 20th a ground frost of unusual severity for such an advanced period in the season caused a considerable amount of damage to crops and vegetables. On the surface of the grass the thermometer on this occasion fell to 24° at Llangammarch Wells, to 25° at Greenwich, and to 26° at Birmingham and Tunbridge Wells. Later on the protracted thundery period to which allusion has already been made fairly set in, some local storms on June 30 being attended by as much as 2·8 in. of rain at Buxton, and by nearly 3·0 in. at Wellingborough, where the bulk of the fall occurred in the space of an hour.

July opened with summer warmth, the thermometer on the 3rd or 4th rising to 80° and upwards in several parts of our eastern, midland and southern counties, and reaching 87° at Greenwich. The weather afterwards broke up entirely, and for the remainder of the month thunderstorms or heavy rains, or both combined, occurred almost daily in some parts of the country. The most noteworthy storms were reported: (1) On July 4, the accompanying rainfall amounting to between an inch and a half and two inches in many places, and to more than two inches and a half at Skegness. In the west and south-west of England, and more especially in Somersetshire, a severe and destructive hailstorm was experienced, some of the stones which fell around Winscombe and Axbridge being as large as hen's eggs. (2) On July 6 and 7 in the south-east of England, when over an inch of rain fell at Kew, and nearly an inch and a half at Isleworth. (3) Between July 23 and 29 thunderstorms occurred daily over a large portion of the country and were attended in places by further heavy falls of rain. At Middlesbrough nearly 2 in. fell on the 23rd in the space of an hour and a quarter. On July 16 a heavy fall of rain, unaccompanied as a rule by any electrical disturbance, occurred over nearly the whole of England, the amount exceeding 2 in. in many localities and exceeding 3 in. at Rugeley and Barrow-on-Soar.

Similar weather prevailed throughout the earlier half of August, and between the 12th and 17th thunderstorms again occurred daily in many localities, including the Metropolis. Among the heaviest falls of rain were:—On the 2nd over 2 in. at Bishop's Castle and Llangynhafal, in Denbighshire; on the 5th nearly 2 in. at Malvern, and nearly 2½ in. at Cheltenham; on the 12th nearly 3 in. at Scaleby, of which about 2½ in. fell in an hour and a half; and on the 17th when about an inch

and a half fell at Warlingham (in the space of forty minutes), at Grayshott, and at Sandown, in the Isle of Wight. The latter half of August was mostly dry but cool. During the entire month there was in fact no place in the United Kingdom in which the shade temperature rose as high as 80°.

For the summer as a whole the mean temperature was everywhere below the average. Owing to the partial character of many of the heaviest thunder showers, the total rainfall of the season varied greatly in different districts. In the south-east of England and also in the north-western counties there was a small deficiency, but in other parts the amount was in excess of the average, the departure being greatest in the eastern and midland counties. The aggregate duration of bright sunshine agreed fairly with the normal, excepting in the southern districts and the Channel Islands, where there was a rather pronounced deficit.

THE AUTUMN OF 1915.

A general prevalence of fair dry weather in the autumn furnished a good start for the agricultural season of 1916. As regards temperature the earlier half of the autumn was rather changeable, the tendency being all in favour of cool weather. After the third week in October this tendency became very marked, and over a large portion of the country the succeeding month proved one of the coldest Novembers on record.

September opened with a cool dry air, several localities reporting an entire absence of rain lasting over a fortnight, and in a few isolated places for more than three weeks. Towards the middle of the month the conditions became warmer and less settled. Between the 16th and 18th the thermometer rose above 75° in all districts and reached 80° at Ramms, Tottenham, and Woking, the week ended September 18 being warmer than any week in the previous July. On the 24th a heavy fall of rain occurred over southern England, between an inch and a half being measured in several places and more than two inches and a half at Totland Bay, in the Isle of Wight, where the day was the wettest for at least twenty-eight years past. On the two following days an unprecedentedly heavy rainstorm in the north-east of Scotland caused much damage, not only to the crops but to the roads, railways and bridges, the floods resulting in a serious interruption to all means of vehicular traffic. On the 28th another heavy fall occurred in the east and south-east of England, nearly 2 in. at Newick in Sussex, and nearly 2½ in. at Margate. Sharp ground frosts were reported in many places between the 28th and 30th.

October was mostly very dry excepting in the south-western district, and in the middle portion of the month there were

again many places in which no rain fell for more than a fortnight, the drought lasting at Wokingham and at Weston Turville, Bucks, for as many as 20 days. Between the 11th and 14th the weather was agreeably warm, shade temperatures of 65° or a trifle above being registered very commonly in the inland districts. Towards the close of the month some heavy rains were reported in the west and south; on the 23rd or 24th between 2 and 2½ in. were measured in several parts of Dorset and South Devon, and on the 28th and 29th the total fall at Sandgate in two days amounted to nearly 3½ in.; while on the 31st many places in southern England reported over an inch and a half, and Grayshott and Basingstoke about 2 in.

November was distinguished by an almost continuous run of cold weather, the lowest temperatures being observed in some places on the 17th or 18th, but more commonly between the 27th and 29th. On the latter occasions the sheltered thermometer fell below 20° in many districts and below 15° at several places in the west and north. At Gwernysfed, in Brecon, it sank to 13°, and at Morecambe and Wellington, in Shropshire, to 12°. Few heavy falls of rain were reported, but on the 12th more than 2 in. was experienced at Chatsworth and Bethesda, Ruthin, and Newcastle-on-Tyne. 2½ in. at Pen-y-Gwryd, and over 3 in. at Little Massingham, in Norfolk. Snow fell in several districts on the 15th, but in many parts of the country there was no measurable precipitation of any kind between the 16th and 28th of the month.

Owing in a very large measure to the cold weather of November, the mean temperature of the autumn was everywhere below the normal. In the south of England the aggregate rainfall was not greatly below the average, but in all the more northern districts the deficiency was large, sufficiently so in places to cause a serious shortage in the water supply. Over the north eastern counties generally the autumn rains amounted to little more than two-thirds of the average, and in the north-western counties to only one-half. At Lancaster there were in the course of the three autumn months only 25 days with rain, the total of 3·8 in. being less than 35 per cent. of the average. Over all the more western parts of the country the duration of sunshine was largely in excess, but in the midland and eastern counties the amount agreed very closely with the normal.

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NOTES, COMMUNICATIONS, AND REVIEWS.

The Midland Agricultural and Dairy College Exhibit at Nottingham.—Owing to the abandonment of the Section dealing with Agricultural Education the usual exhibition in this subject was not seen at the Nottingham Show. Special permission, however, was given to the Midland Agricultural and Dairy College to send an exhibit and this concession was much appreciated by the College authorities.

Each branch of work undertaken by the College was represented in the exhibit, and as far as possible prominence was given to those points upon which the College assists the farmer in difficulties that arise in practice.

The Agricultural Department had an extensive collection of the potatoes grown on the College Farm. About seventy-five different varieties are grown each year and a careful record kept of the weight of crop, number of diseased tubers, &c. The results of these and other field trials are afterwards published and circulated amongst the farmers in the counties.

Another matter of importance to the farmer in the Midlands is the economical rearing of calves and the early substitution of some other food for milk. In this connection a feeding trial was in progress at the time of the Show and details of the various feeds, methods of preparation, &c., were illustrated by diagrams and samples of the foods themselves. The actual rations fed were made into gruel and consisted of:—

- | | |
|--------|--|
| Lot 1. | 1 $\frac{1}{2}$ galls. Separated Milk. |
| | $\frac{3}{4}$ lb. Crushed Oats. |
| Lot 2. | 1 lb. Linseed Cake Meal. |
| | 1 $\frac{1}{2}$ lb. Wheat Germ Meal. |
| | $\frac{1}{4}$ lb. Dried Yeast. |
| | $\frac{1}{4}$ oz. Salt. |
| Lot 3. | 1 lb. Linseed Cake Meal. |
| | 1 $\frac{1}{2}$ lb. Bean Meal. |
| | $\frac{1}{4}$ oz. Salt. |

The exhibit of Shell Baskets made from Willow afforded an example of the College's activity in endeavouring to secure an outlet for locally grown willows and in bringing to the notice of the War Department of the Government the fact that willow is material for the making of shell baskets has qualities which render it equal to cane.

The Poultry Department exhibited a number of alternative rations which had been arranged to ensure economical, and at the same time efficient feeding.

The Dairy Department which occupied the space at the end of the shed had prepared an exhibit of the various kinds of cheese made in the College dairies and for comparative purposes each lot of cheese had been made from ten gallons of milk. The weight of cheese obtained in each case (except the soft and the blue veined cheese) showed that fairly considerable differences are to be expected.

The Live Stock Officer for the Province and the Agricultural Organisers of the contributing counties were present at the Stand, and literature dealing with their work was laid out on the table along with the College publications.

The Architects for the new College buildings at Sutton Bonnington had prepared a drawing showing the scheme when complete, and also detailed plans of what is in course of erection.

The necessity of utilising all available feeding stuffs was brought forward by exhibiting some of the less commonly used foods, *e.g.*, palmit cake, cocoanut cake, hempseed cake, wheat germ meal, dried yeast, &c. All these feeding stuffs have been the subject of feeding trials at the College, and the information regarding them was given to enquirers.

Mixtures of various artificial manures were also shown so as to illustrate the desirability or otherwise of so doing.

The Chemical Department dealt chiefly with those matters which require the assistance of the analyst. Samples of compound manures were shown to point out the necessity of the buyer having an idea of the money value of what he purchases. At the present time when manures are at such high prices the seller frequently asks—and obtains—a price that is out of proportion to the fertilising value of the material sold. The manure, however, agrees with the guarantee and the purchaser has no redress. Examples of cases that have actually come to the notice of the College were given in a leaflet and the materials themselves exhibited.

A special exhibit of wheat offals showing the percentages of flour, husk, &c., was arranged and samples of adulterated offals were shown. In the Bacteriological section the following matters were illustrated by diagrams, charts, or actual specimens:—The use of starter in cheesemaking; good and bad starter; ropy milk; fermentation test for milk; rate of increase of organisms in cooled and uncooled milk. Apparatus for testing milk for tubercle bacilli was also shown.

In the Botanical section the chief object of the exhibit was to show the co-ordination of the work of the County Organisers and the College through the Special Botanical Adviser. For this reason the exhibit was of important practical value—the demonstrations representing problems to

which the farmers of the counties had drawn the attention of the organisers.

1. *Agricultural Seeds.* Forty examples of seeds of clovers, grasses, and cereals which had been forwarded to the College for analysis during 1914-15 were shown in bulk, in process of germination, and with separated impurities. The percentage of germination was given in each case, and, where possible, the price. Under these conditions there was no difficulty in recognising those samples which were of highest value. The constituents of two seed mixtures were shown representing—

- (a) A case where the proportions were faulty, the cheap grass seeds, such as ryegrass, being present in great excess over the more expensive clover seeds.
- (b) A case where the constituents were of poor quality. In the latter example the germination capacity of the white and red clover seeds were 28 per cent. and 41 per cent. respectively.

About 200 weed seed impurities mounted on cards accompanied this section.

2. *Preparations used as seed-dressings.* The harmful effects on germination of certain preparations used by farmers were shown by comparison of treated with untreated seed when grown in, and out of, soil. In some cases a slight excess over the quantity recommended for use is sufficient to cause death of the embryo. A case was taken in which 50 per cent. of seed had been killed by a seed dressing.

3. *Fungus Diseases.* Plants attacked by—

- (a) Fungus causing blindness in barley.
- (b) „ „ smut (loose and cover) in cereals,
- (c) „ „ scab in potatoes.
- (d) „ „ clover sickness.

were exhibited and the loss due to the harmful practice of sowing diseased seed demonstrated. The best methods of "sterilisation" of seeds were shown and particulars given concerning the carrying out of these processes.

Ten varieties of maize and other plants suitable as green forage and twelve varieties of winter beans, in the growing stage, were also shown.

W. GOODWIN.

Spring Frosts and the Fruit Crop.—For some reason or other there are always a number of sharp frosts in the spring. The last fortnight in April is almost always a perilous time for fruit growers, whilst, again, there is a period of danger about the middle of May. Whatever kind of weather may have preceded these occasions there is then, in most years, a cooling of the atmosphere involving night frosts of more or less severity. The amount of harm which results to the fruit trees depends

upon the state of growth. Right up to the day of the actual opening of the blossom the floral envelope so protects the immature organs that even a sharpish frost will not do much harm. When once the flowers have opened and the delicate stamens and pistil are fully exposed, a freezing temperature will shrivel them up and all hope of fruit is gone. If the time has really set there follows a period when the grower may be easy in his mind. The withered corolla huddles round the fertilised ovaries and gives a fine protection against the sharp frosts.

It is rather curious that British growers have given comparatively little attention to the question of these spring frosts. Five seasons out of six these visitations occur, yet most gardeners view the matter with a kind of fatalism: this is bad from a business standpoint. Some interesting facts have been collected by the Meteorological Office relating to spring frosts. It has been shown that the worst frosts of the spring are associated with a special type of weather. The particular conditions when a few nipping hours are probable, may be classified thus:—

- (1) The wind is in a northerly quarter, and, with a falling barometer there are showers of hail or snow. In this weather of this type the sky is almost always clear at night and the temperature falls rapidly.
- (2) After a spell of mild rainy weather with a south-west wind the glass falls lower and the wind veers to the north or north-west. Again the sky clears about sunset and the thermometer goes down with a run.
- (3) The wind is in the east or north-east and the sky is clear. Often enough the days are very warm in this type of weather but the temperature drops rapidly at night.

Of course where only a few trees are concerned, and these are small ones, it is a simple matter to protect the specimens with canvas or matting. Any material which will prevent loss of heat, and at the same time keep away the freezing air, will save the trees from damage. Various schemes have been followed in California, and some of these have proved extremely useful in shielding the orchards from the severe frosts which visit even this favoured part of the world. A common practice is to saturate the ground under and around the trees with moisture. This has the following outcome. The water is likely to cause a mist over the land and this acts as a screen preventing the rapid loss of heat from the ground. The soaking of the ground is not suitable in the case of low growing plants which are showing a lot of new foliage. In such case the specimens draw up too much moisture and, as a consequence

suffer more from frost; all vegetable tissue is more readily damaged by a freezing temperature when the cells are charged with moisture.

Another scheme, which has often saved the orchards of California, is that of lighting smoky fires under the trees. Heaps of garden refuse, or anything that will burn slowly and without much flame, are formed at intervals throughout the plantation. When these are lighted the dense clouds which arise not only prevent a rapid radiation of heat from the ground but also act as a protection to the buds themselves. Yet another plan which is carried out in the case of valuable crops is that of standing roughly made paraffin lamps on the ground under the trees. In many Californian establishments thousands of lamps are kept in readiness for placing out at any time. To the British grower the plans seem troublesome, but as will be shown, there is far less difficulty than might be imagined. In any case loss is saved at a later stage. The effect of the lamps is to raise the temperature during those few biting hours between midnight and dawn.

It is only within comparatively recent times that this question of orchard heating has received attention in this country. Some very interesting experiments with a new orchard heater have been carried out by Mr. Philip Mann, Horticultural Instructor for Buckinghamshire. Five acres of plum trees were selected for the purpose of the test. On May 27 there was a very severe frost and a great deal of harm was done to trees in the locality. During this night and two succeeding nights the heaters were filled with coal and lighted as soon as the temperature fell to 32° F. In the area where the stoves were employed the temperature did not fall below 28° F. The temperature in the district which did not come under the influence of the stoves fell to 20° F., whilst 14° F. of frost were registered in the village. Thus, it was evident that the heaters prevented a fall of 10° F. The loss of crop in the protected area was only about 5 per cent., whilst in the other districts this ranged from 60 to 90 per cent. The owner gathered almost a record crop, the trees being so heavily laden that the branches had to be supported. As for the cost of the heating during the three nights when the stoves were used, four tons of coal were burned. The value of the coal at the time was 4*l.*, but by its use a crop worth 300*l.* was saved. To this must be added the cost of the stoves. The price of these is 1*s.* 9*d.* each, a total of 17*l.* 10*s.* for the 200 which were useful for the five acres. But the heaters would last with reasonable care for ten to fifteen years, so that the annual outlay should only be reckoned at about a tenth of the original price. The labour required for lighting and putting out the

heaters is not a serious matter, and the cost of using the heaters for the three nights in question is given as follows:—

	£	s.	d.
Heaters ($\frac{1}{10}$ th purchase price)	1	15	0
Fuel	1	0	0
Setting	0	6	0
Lighting and attending	0	5	0
	6	6	0

The most important point in connection with the use of orchard heaters is to have all in readiness during the danger periods. Each stove should be provided with a lighter, wood and coal, so that it can be brought into use in a short time. To show that this part of the work is easy it may be mentioned that a lad readily filled forty heaters in a hour. This was sufficient for the protection of an acre of fruit trees. The heaters may be used with a trifling adjustment for low growing crops such as strawberries and potatoes. Electrical alarm thermometers are invaluable for use with the heaters in that these can be adjusted so that a warning bell rings in the owner's house when the temperature sinks to a dangerous level.

In the planting time the fruit growers may minimise the danger by realising the regions on his ground where the temperature is likely to fall the lowest in times of sudden frost. A great deal of trouble may be averted by putting only the late flowering and hardy varieties in such positions. It is not perhaps generally realised that it is the so-called sheltered spots which are often the least safe of all. This is not only owing to the fact that in mild seasons the trees may have been brought to a very forward state. There is another and a far more important reason. Hollows and depressions of all kinds, no matter what their aspect may be, are far more likely to be visited by frost than the higher lands. This is largely due to the fact that the cool air gravitates to the bottoms, whilst the warmer currents tend to move upwards to the higher levels. Thus on the uplands there may be no frost at all, whilst in the hollow many degrees may be registered. As well, too, on the hillsides there is always a much greater air movement: this prevents the settling of those pools of chilled air which are the cause of so much trouble to the fruit grower.

S. LEONARD BASTIN.

Three Books on Soils. I. Soils and Manures.—E. J. Russell, D.Sc., Director of the Rothamsted Experimental Station. (Cambridge Farm Institute Series.) This book tells in a simple straightforward and eminently practical manner, the story of the growth of crops in the soil, and the methods of increasing

crop production. The author does not assume that his readers will have more than the most elementary knowledge of chemistry. The book should be useful to every one who is interested in the soil, and specially to farmers and to students who wish to learn about soil science from the practical side.

Most writers on this subject are inclined to confine their attention to the chemical examination of the soil and its improvement by manuring. Dr. Russell takes a much wider view of soil science, and begins by pointing out with admirable clearness that the productiveness of the soil depends on a number of factors, such as its power of supplying plant-food, water, air, warmth and root space, and its freedom from poisons and pests; of which factors only one, namely, plant-food, can be improved by the use of manures.

The belief that all soil troubles can be put right by manuring is surprisingly widespread. It is a pitfall which entraps the experimenter perhaps more frequently than the practical farmer, who knows by bitter experience that the use of manures in certain cases is only "throwing good money after bad."

Dr. Russell proceeds to deal systematically with all the factors of productiveness mentioned above. He describes how the structure of the soil is examined and how its comprehension underlies the general principles of drainage and tillage. He discusses the relation of climate and of soil types to productiveness, and finally he describes the composition and uses of all kinds of fertilizers. His wide experience in talking and writing to farmers and gardeners who possess little knowledge of chemistry, has enabled him to treat his subject in simple language, using very few hard words, but without in any way sacrificing accuracy, or omitting points of interest and importance. "Soils and Manures" is worth reading by every farmer who wants to get the most out of his land in these abnormal times.

II. Soils, their Properties and Management.—T. Lyttleton Lyon, Elmer O. Fippin, and Harry O. Buckman, Professors of Soil Technology in Cornell University, U.S.A.—(Macmillan's Rural Textbook Series). The book by the American writers is of an entirely different character, intended rather for the expert or senior student well grounded in the sciences bearing on agriculture than for the farmer or short course student. Like Dr. Russell, however, the authors take a wide view of the requirements of crops, and do not give to manure the undue prominence which they held a decade ago.

The first chapter deals with general considerations such as the factors of productiveness, an outline of the composition of the soil, and the relation between the soil and the plant. In succeeding chapters the following subjects are treated: the

origin and classification of soils ; the separation of soil particles ; the physical properties of soils ; the organic and colloidal matter of the soil ; soil structure ; the water supply of the plant ; soil temperatures ; available plant nutrients in soils ; retention of plant nutrients by the soil ; causes of sterility ; absorption of nutrient salts from the soil by the plant ; the living organisms of the soil and their relation to productiveness ; the circulation of nitrogen in air, soil, plants and animals ; the aeration of the soil ; manures and manuring ; drainage, tillage, irrigation and dry farming, and soil surveys.

The above outline of the contents of the book will give some idea of the comprehensiveness of its treatment of all phases of soil science, but in spite of its 740 pages, some important points are dismissed with scant discussion. This is notably so in the case of the bacteria of the soil. The authors devote more than half their space to the various physical aspects of fertility, which is natural in an American book, since this side of the subject has attracted much more attention in that country than elsewhere. For this reason their book is an excellent supplement to the standard British textbooks on the soil in which soil physics is apt to get rather scant treatment.

The book deals of course with the soils of America and the problems arising in their cultivation, but soils are soils all the world over, and the troubles of the cultivator are more or less the same in all lands. The authors have been at great pains to give references to the more important papers and publications on all branches of the subject which should be of great service to the serious student. The book is illustrated by maps and diagrams.

Taken as a whole "Soils, their Properties and Management" is a valuable addition to the literature of the soil, which can be read with great interest and profit by everyone interested in soil who possesses a fair general knowledge of elementary science.

III. The Spirit of the Soil—G. D. Knox.—(Constable & Co.). Ever since Hellriegel and Wilfarth in 1886 discovered the microbes which grow on the roots of leguminous plants, such as clover, beans, peas, &c., and enable them to obtain their nitrogen from the air, repeated attempts have been made to increase the productiveness of the soil by inoculating the seed or the seed with cultures of these microbes. In the nineties a German firm put on the market a culture grown on nutrient gelatine. Then came an American preparation in which a liquid culture was dried on shreds of cotton wool. More recently still Professor Bottomley's Nitrobacterine was widely advertised. Now Professor Bottomley is putting on the market his Bacterised Peat.

All these and much more are described in a clear and

interesting manner by Mr. Knox in the "Spirit of the Soil," which gives tables, diagrams, and illustrations of the results which have been obtained. There is no doubt that inoculation with bacterial cultures enables leguminous plants to grow vigorously in sterile soils without nitrogenous manures. So far they are, as the author says, a scientific success. But in ordinary cultivated soils there are almost always so many of the microbes which grow on the roots of leguminous plants that the addition of the comparatively small number contained in any kind of culture can make no appreciable difference. For this reason soil inoculation has never made any widespread practical success. Occasionally it may happen that a cultivated soil is devoid of the right kind of microbes for a crop which it has never grown before, for instance lucerne, in which case inoculation of the soil or the seed would almost certainly improve the growth of the crop; but these cases are few and far between, and a little soil from an established lucerne field is quite as likely to be successful as a culture.

Bacterised Peat is a new departure. It consists of peat which has been first fermented, then sterilised, and subsequently inoculated with cultures of two microbes, the microbe which is found on the roots of leguminous plants, and another microbe called *azotobacter*, which can be found in most cultivated soils. After inoculation with these microbes the peat is kept warm and moist so that the microbes may grow. The product contains considerable amounts of soluble nitrogen—according to the author, from 50 to 80 times as much as is contained in farmyard manure—and an entirely new kind of substance called an auximone, which the author compares with those mysterious bodies, the vitamins, which are said to exist in the seed coats of rice and other grains.

The price of Bacterised Peat, which is also called Hamogen, seems to be about 10*l.* per ton. It appears to contain about five per cent. of soluble nitrogen, which, at 15*s.* per unit, works out at 1*l.* 10*s.* per ton, so that it is not a cheap source of nitrogen unless the other constituents are of considerable value. The auximone is supposed to stimulate plant growth; but the author seems to ignore the fact that increased growth, even if produced by an auximone, requires more water, nitrogen, phosphate, potash, sunshine, in fact more of everything. If all these conditions which limit the growth of our crops could be improved there is nothing to show that we should not get the same increased growth without auximone.

The experiments are not convincing. In the pot experiments various composts are used, but all contain about 10 per cent. of the peat. Such a proportion of almost any porous organic material would be likely to produce remarkable results.

Few experiments have been carried out on the field scale, and the results are not very satisfactory. The quantity of pea recommended for outdoor crops is 10 cwt. per acre, which would cost about 5*l*. By the time the necessary phosphate and potash to provide for the expected increase is added, this will be a very expensive manuring.

T. B. WOOD.

Electricity for the Farm—Frederick Irvine Anderson. (The Macmillan Co.). At the present time one gladly welcomes a book that promises help to the farmer, who is so sadly handicapped by shortage of labour. According to the preface this book is "designed primarily to give the farmer a practical working knowledge of electricity for use as light, heat, and power on the farm."

The earlier chapters deal with the measurement of the water power in small streams, such as may be found on many farms. The methods of measuring the flow of water are well described, and are such as any intelligent man could carry out. The measurement of the "head of water" available is, however, quite inadequately treated. The author's statement that "the head is the distance in feet the water may be able to fall from the source of supply to the water-wheel itself" is both inaccurate and confusing. No further indication is given as to the points between which the actual measurement is to be made. Nothing is said as to the gradient of the flume or conduit, or its size for the water available, or as to the possible variations of level of head and tail water at different seasons of the year due to floods and droughts.

The chapters dealing with dynamos, motors, transmission lines, and house-wiring are anything but satisfactory, considering that they are meant to instruct a man entirely unacquainted with the subject. It is essentially the glib talk of the salesman, who advocates the advantages of electric irons, toasters, vacuum-cleaners, ovens, and a hundred other devices that are not what the farmer wants; and not the clear, simple explanation by the expert to the novice. Practically nothing is said about the use of motors for driving farm-plant, nor are any figures given for the power required for chaff-cutters, pulpers, and grinders, &c., which are surely the first things a farmer in this country would consider after, possibly, the lighting of his stables, cow-house, and barn.

The electrical terms are often inaccurately used, or used in such a colloquial way as to be most misleading to the beginner. Thus we read that "18.3 ampere hours is approximately $\frac{1}{2}$ amperes *per hour* for 4 hours."

As to the total capital cost of putting in a complete water-power plant, with wiring and motors, &c., for the power

available, nothing is said. Prices (American) are given for a few parts as bought new or second-hand. No attempt is made to compare the cost of using a hydro-electric plant, such as advocated, with the ordinary oil engine. Such costs as are mentioned are costs of oil only, all maintenance, depreciation, and capital charges being ignored.

The illustrations of the water-measuring weirs, of a dam, and some others are good, but the rest are mostly taken from trade catalogues and are of little value.

The author advocates direct current as the most suitable in all ways for the farm. This is, we think, open to question. The most successful example of the use of electricity for farm work with which we are acquainted is, or was, in the Duchy of Luxembourg, where many of the farming villages had a small local supply. In nearly every case a 3-phase system was in use. The farms there are collected into villages, and one of the villagers had often put in a turbine and generator to supply himself and his neighbours. The houses and farm buildings were lighted, and a motor was often used for chaff-cutting and driving a small threshing machine fixed in the barn. The village carpenter worked his machines by a motor, and sometimes a villager would have a motor and saw, or a motor and grinding-mill mounted on a truck that was drawn round to the different farms to do its work, the power being obtained by tapping the overhead distributing mains. The separator, churns, and pumps at the Co-operative Creamery would also be driven from the supply. The chief advantage of the 3-phase compared to direct current is the absence of commutators on the machines, and the ease with which the voltage can be altered for transmission or distribution.

The author is an American writing for the American farmer, but is the latter really as "cute" as the author believes, when he suggests that "the farmer himself, in many cases, can rewind an old dynamo to fit the speed requirements . . . All that would be necessary to effect this change would be to get the winding data from the manufacturer himself and proceed with the winding"?

We quote this as it is rather typical of the author's attitude to all difficulties likely to be encountered. In fact the book as a whole bears a strong resemblance to those "boys' own books" that tell one so glibly and encouragingly how to build a 5-ton yacht, and start by sending one to the grocer to beg an old orange box for nothing.

We regret having had to point out what seem to us so many defects in this book, but to introduce electric energy to the farmer in such guise would be a great mistake. We believe that electric energy may in many cases be of real service for

light and power on the farm, but it must be put before the farmer in such a way as to prove that the money spent will bring a proper return.

We can, however, heartily recommend the book as a suitable present to the mechanically minded son of any farmer, as it might well sow seed there that would bring a paying crop of developments one day.

B. M. JENKIN.

Surveying and Building Construction for Agricultural Students, Land Agents and Farmers.—A. H. Haines, P.A.S.I., and A. F. Hood Daniel.—(London: Longmans, Green & Co. Price 10s. 6d. net.)—This work comprises in one volume two subjects—Surveying and Building Construction—both of great importance to those for whom it has been compiled. Its aim is briefly stated in the preface—"to give practical aid" to those whom it addresses; but the authors rightly emphasise a fundamental principle of the study of their subjects and insist that "no amount of reading can take the place of practice."

The first section treats of Surveying, including chain and compass survey, levelling; sextant, plane table and theodolite work; tachemetry, the laying out of curves; plotting, plan drawing and the necessary mathematics are also dealt with. This covers what may be described as the every-day survey work of an estate office. We are glad to notice that, in dealing with his subject, the author has specialised along the lines which are of most use to his particular class of readers; and, on the whole, his work has been admirably carried out.

Our main criticism of his work is that, in certain instances, the author has gone too far, and he describes methods which are of little practical use to agricultural students.

Thus, on page 133 he describes the hypsometer, and then states that its use is outside the scope of the book. Why not omit it altogether? Again, on page 43 we have one or two simple methods of finding the direction of the true North which, though approximate only, are sufficiently accurate for ordinary purposes. Immediately following are two more exact methods requiring astronomical observation. The second of these describes the method of finding the meridian by equal altitudes of a star, and it is stated that the time of a star's crossing the meridian "can be ascertained from the 'Nautical Almanac.'" This, no doubt, is indirectly true, but we fear that a student who turned up the "Nautical Almanac" to find the time of a star's meridian passage would be apt to question the accuracy of his text-book. The "Nautical Almanac" gives the star's Right Ascension, which is the same as the *sidereal* time of its meridian passage; and the conversion of *sidereal* into mean solar or "clock" time requires a knowledge of the longitude and also

of the clock error on local mean time. These details are nowhere indicated, and this method of finding the meridian is surely beyond the scope of a book which professes to give practical help to the agricultural student.

In Chapter X., which treats of the plane table, we could wish for a more extended description of the use of this invaluable instrument. The plane table has been too long neglected by English surveyors, though in recent years its many advantages are being gradually recognised. Indian, Continental, and American topographers are fully aware of the capabilities of the plane table, and our students should be well grounded in its methods. We observe the absence of any note of warning regarding the use of the trough compass when plane tabling. Dependence on the compass may result in serious error due to local attraction, if "setting" the table by this method be regarded as anything but an approximation.

While the section on surveying gives rather more than is required for its purpose, the description of methods and of instruments is thoroughly sound, though we suggest that judicious pruning would increase its value as a practical text-book.

The second section of the book deals with Building Construction. Here, in addition to the usual information regarding building materials and structural details, we have chapters containing detailed specifications and priced bills of quantities for various farm buildings. There is also a block plan for a 400-acre mixed farm, and a very useful chapter on rural cottages, the provision of which has been a burning question of late years. An important feature of this section is the reproduction of the Local Government Board's regulations governing rural structures. After studying this section our regret is that there is not more of it. No doubt the author's space was limited and he has made the most of his opportunities: we would welcome a more extended treatise from his pen. We would bring to his notice a point of some importance; the plans of buildings might with advantage be on a larger scale; as they stand, the figured dimensions are so small and indistinct that they are difficult to decipher.

N. F. MACKENZIE.

Fifty Years of Agricultural Politics, being the History of the Central Chamber of Agriculture—A. H. H. Matthews,—(431 pp., P. S. King & Son, 7s. 6d.). Perhaps the history of agriculture, in comparison with histories of other subjects, has shared the neglect that is believed to have been shown towards the industry itself for an indefinite time. On the whole subject there is little of a convenient size beyond Prothero's "English Farming" and Curtler's "Short History." Particular

aspects have received more attention, and exhaustive studies have been published, such as Thorold Rogers' "History of Agriculture and Prices" and "Six Centuries of Work and Wages." Again, the labour question has engaged more interest than others, and Hasbach's "History of the English Agricultural Labourer," for example, tells the story of the labourers' fortunes pretty fully. Mr. Matthews' book, as its title indicates, is also an account of a special and somewhat limited aspect of agriculture. All the progress that has been made in the industry does not reflect itself in politics; but it is surprising what a comprehensive index of this progress seems to be afforded by the questions and movements which turn up in politics. The history of agricultural politics during the last fifty years, and the history of the Central Chamber of Agriculture, are treated as one and the same here, and the subject is divided under several heads, such as Cattle Diseases, Local Taxation, Land Tenure, and Education. Each of these again is discussed according to the chronological order in which they formed the matter of legislation or proposed legislation. This arrangement enables the reader to follow the political history of any particular question from the time it was raised until it assumed the form which it holds at present. Thus, under the chapter on Land Tenure the development of the principle on which compensation for unexhausted improvements has been awarded is traced. To the general reader, as well as to the writer who in the future may set himself to write a general history of agriculture, this book will supply useful information. It is not always clear what part the Central Chamber played in promoting and shaping different measures. On the other hand, some steps that have been of immense benefit to agriculture were taken almost solely as a result of persistent representations by the Chamber. It was due to work of this kind that the Board of Agriculture was re-established as a separate Government department in 1889, after a suspension of sixty-seven years, during which its work had been performed by the Board of Trade and other departments, naturally to the dissatisfaction of agriculturists. On agricultural education, again, the Chamber has done much useful work.

There may be questions which are discussed rather much from the party point of view, but this is, perhaps, inevitable. So long as prominent men in both parties find it possible to hold the chair of the Central Chamber in different years, it may be inferred that the party spirit has not yet asserted itself unduly. The attitude of the Chamber on the general education for children and on the age limit for attendance may be considered by many to be determined by short-sighted views. Similarly there is room for difference of opinion on questions

of taxation and land tenure, associated as they are with problems the solutions of which have not been made sufficiently clear. Mr. Matthews does not conceal his own views on these matters; but if any reader objects to this, it may be said reasonably enough, perhaps, that his views as faithfully as possible represent those of the Chamber, and that this is as it should be. An attractive feature of the book is the series of photographs of well-known men who have taken a leading part in promoting and shaping political measures affecting agriculture during the period covered.

J. ORR.

THE HON. JOHN RICHARD DE CLARE BOSCAWEN.

MR. JOHN BOSCAWEN was the youngest son of the sixth Viscount Falmouth. He was devoted to country life, and spent much time at his home in Cornwall. Here he was prominently associated with local administrative work of every kind, particularly that of the County Council, of which he was an alderman. In connection with agriculture he was specially interested in the development of dairying. The County Dairy School owed much of its success to him, and he was intimately concerned in the scheme by which five schools for cheese-making will shortly be established in Cornwall. He realised the great possibilities of co-operative enterprise, and assisted in the creation and management of a successful co-operative dairy society. Outside agriculture, he was best known in connection with horticulture, for gardening was his great hobby, and he was an authority on daffodils. He became a Member of the Royal Agricultural Society in 1908, and was elected the Member of Council to represent Cornwall in 1914. He served on the Journal and Education, Botanical and Zoological, Showyard Works, and Dairy and Produce Committees.

Previous to his election on the Council he had assisted the Steward of Dairying and Produce at the annual Shows, and since 1910 had acted as Steward of the Horticultural Section. The present high position which this annual exhibition holds in the horticultural world is largely due to his administrative ability and untiring energy. His unflinching cheerfulness and courtesy endeared him not only to exhibitors and officials, but to every one else with whom he was brought in contact.

Mr. Boscawen married, in 1890, Lady Margaret Byng, daughter of the second Earl of Strafford, and he leaves one daughter, Lady Petra. His death occurred very suddenly on Sunday, December 12, and he had attended the monthly meetings of the Council, apparently in his usual health, a few days before. He was in his fifty-fifth year.

THE NOTTINGHAM SHOW, 1915.

FOR a second time the Society's Show has been held in Wollaton Park, adjoining the seat of Lord Middleton, and both the Local Committee and the Society are to be congratulated on the fact that this beautiful site for the Show was again available.

In view of the unusual conditions brought about by the war it was fully realised before the event that the Show at Nottingham could not be expected to be as successful financially as the previous Exhibition in 1888 had been. During the progress of the arrangements there were suggestions that it would be wise to postpone the holding of the Show, but the Society's engagements with Manchester and Cardiff for the years 1916 and 1917 rendered this course impracticable. In the extraordinary situation it was felt that the Society's duty was to proceed with the exhibition, and thereby assist in maintaining the standard of British Agricultural Industry. Owing to the numerous calls on the public, the Nottingham Committee could not provide the customary local fund, but the usual contribution of 2,000*l.* towards the expenses was made by the Corporation, and a further sum of 741*l.* was contributed by Noblemen and Gentlemen interested, and Members of the Nottinghamshire Agricultural Society—the latter subscriptions being kindly collected by their Secretary, Mr. W. H. Bradwell.

Fortunately, in happier times, a not inconsiderable reserve had been accumulated by the Society so that the possibility of a monetary loss could be contemplated with equanimity.

The County Society gave up their Show for the year, and the Members were accorded the usual privileges.

When presiding over the Governors' and Members' Meeting in the Showyard at Nottingham, the Duke of Portland expressed the hope "that the general opinion of the agricultural world would be that the Society and the Nottingham people had done the right thing when they determined to proceed with the Show notwithstanding the war." That His Grace's hopes have been fully realised there can now be no doubt.

In spite of the unfavourable weather on the first two days of the Show the aggregate attendance for the five days was 103,883, and the financial result was a debit balance of 2,945*l.* When everything is taken into consideration, this cannot be regarded as unsatisfactory.

In 1888 Nottingham had the distinction of recording what was up to that time the largest single day's attendance for the Royal Show. This record held the field until Newcastle was visited for the fourth time in 1908. Doubtless many of the local people—when the second Nottingham Show was decided on—

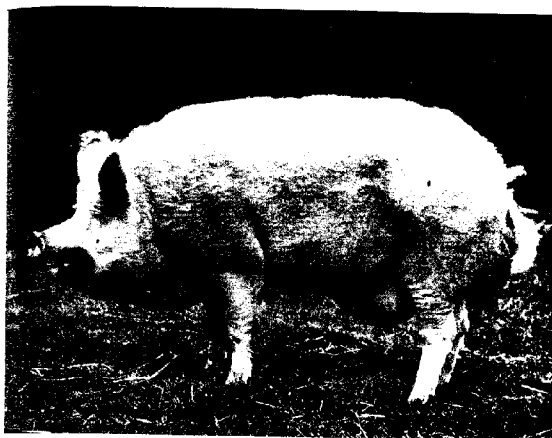


FIG. 1.—LARGE WHITE BOAR, "STAMFORD ROGER 3RD."
Winner of Champion Prize for best Large White Boar, Nottingham, 1915.
Exhibited by Mr. R. E. W. STEPHENSON.

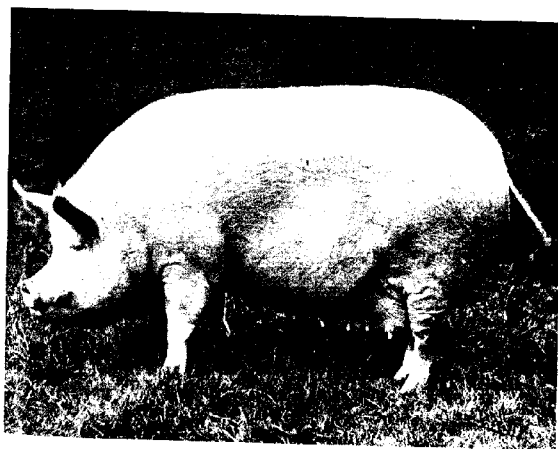


FIG. 2.—LARGE WHITE BREEDING SOW, "WORSLEY LADY 7TH."
Winner of Champion Prize for best Large White Sow, Nottingham, 1915.
Exhibited by Sir Gilbert GREENALL, Bart., C.V.O.

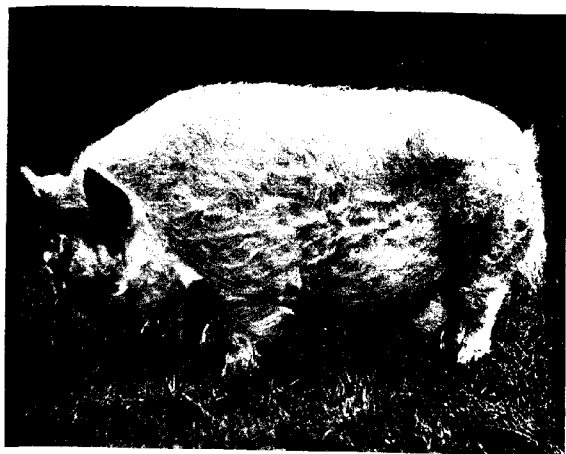


FIG. 3.—MIDDLE WHITE BOAR, "SENTINEL OF WHARFEDALE."
Winner of Champion Prize for best Middle White Boar, Nottingham, 1915.
Exhibited by MR. LEOPOLD C. PAGET.



FIG. 4.—MIDDLE WHITE BREEDING SOW, "WHARFEDALE REVELLA."
Winner of Champion Prize for best Middle White Sow, Nottingham, 1915.
Exhibited by MR. LEOPOLD C. PAGET.

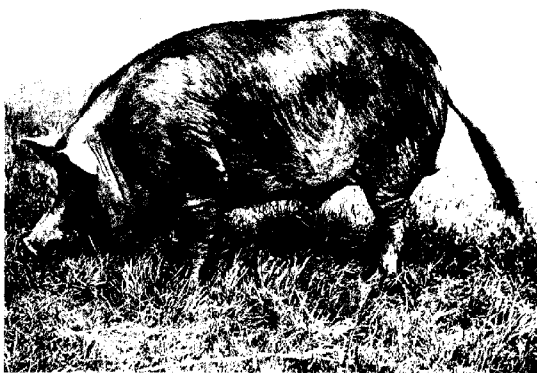


FIG. 5.—TAMWORTH BOAR, "KERR'S CHOICE."
Winner of Champion Prize for best Tamworth Boar, Nottingham, 1915.
Exhibited by MR. D. W. PHILIP.

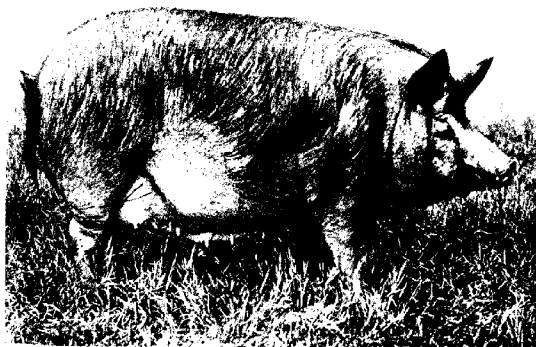


FIG. 6.—TAMWORTH BREEDING SOW, "CHOLDERTON TIBBIE."
Winner of Champion Prize for best Tamworth Sow, Nottingham, 1915.
Exhibited by MR. D. W. PHILIP.



FIG. 7.—LARGE BLACK BOAR, "TREVISQUITTE GOLIATH."
Winner of Champion Prize for best Large Black Boar, Nottingham, 1915.
Exhibited by MR. THOMAS WARNE.



FIG. 8.—LARGE BLACK SOW, "PREMLEY GODIVA."
Winner of Champion Prize for best Large Black Sow, Nottingham, 1915.
Exhibited by MESSRS. W. AND H. WHITLEY



FIG. 9.—LINCOLNSHIRE CURLY-COATED BOAR, "CALLOW PARK
TRIUMPH 2ND."

*Winner of Champion Prize for best Lincolnshire Curly-Coated Boar, Nottingham, 1915.
Exhibited by MR. FREDERICK F. BOWSER.*

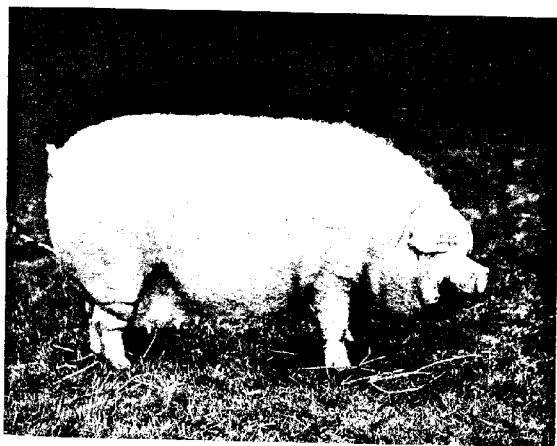


FIG. 10.—LINCOLNSHIRE CURLY-COATED BREEDING SOW, "MARSHLAND
BOBTAIL."

*Winner of Champion Prize for best Lincolnshire Curly-Coated Sow, Nottingham, 1915.
Exhibited by MR. F. DONALD GROUND.*

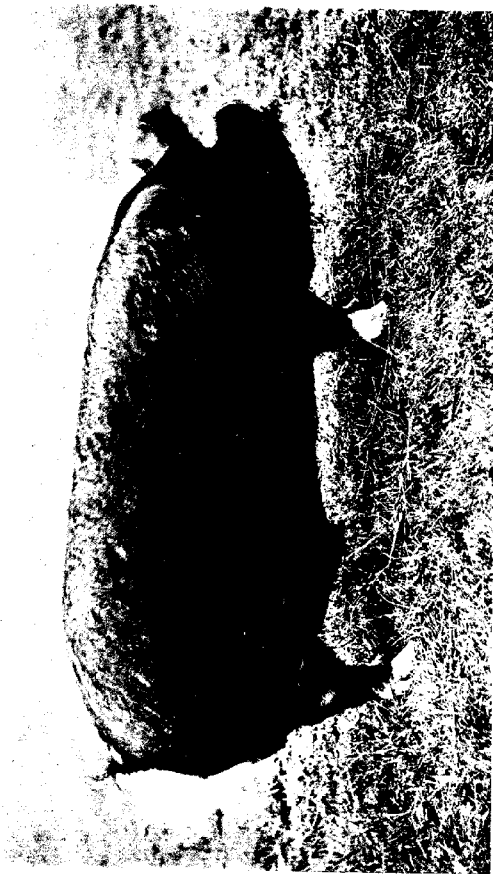


FIG. 11.—BERKSHIRE BOAR, "LITTLE JOHN."
Winner of Champion Prize for best Berkshire Boar or Sow, Nottingham, 1915.
Exhibited by Mr. G. S. EDWARDS.

had great hopes of wresting from the Tyneside City not only the "one day" but also other records. These hopes were doomed to be disappointed in view of the unprecedented conditions under which the Show was held.

On the occasion of a gathering presided over by the Mayor of Nottingham, Sir Gilbert Greenall gave it as his opinion that, in view of the exceptional circumstances of the year the Society would be quite justified later on in "taking Nottingham out of its turn." Bearing in mind the fact that only two of the seventy-six Shows have been held in the city, it will probably be considered that there is a good deal to be said in favour of the suggestion.

It is usual in this Report to give a table comparing the Show of the year with those previously held in the same place. As Nottingham has only been visited twice particulars are added below of the Shows held in the neighbouring towns of Derby and Leicester.

Year	Place of Meeting	President	Implements entered	Entries of live stock	Persons paying for admission	Financial Result (+ = Profit - = Loss)
1813	Derby	Earl of Hardwicke	568	730	(No records)	£ 3,161
1868	Leicester	6th Duke of Richmond	6,369	964		97,138 + 488
1881	Derby	Mr. William Wells	5,990	1,229	127,096	+ 4,528
1888	Nottingham	Sir M. W. Ridley, Bt. M.P.	4,717	1,886	147,927	+ 4,229
1896	Leicester	Sir Walter Gilbey, Bt.	8,447	1,883	146,277	+ 3,690
1905	Derby	Mr. F. B. W. Cornwallis	4,772	2,319	110,143	+ 2,626
1915	Nottingham	Duke of Portland	4,294	2,297	103,863	2,946

Notwithstanding the number of firms engaged on Government work, the display of implements and machinery was of a satisfactory character, though, as was to be expected, the amount of shedding occupied was considerably less than in pre-war days as will be seen from the comparative statement on page 199.

On this occasion no Plantations and Nurseries Competition was held in the district of the Show, and there was no Forestry Exhibition beyond the classes for gates, tree guards, &c.; and probably owing to the scarcity of labour on estates, these classes were but poorly supported. An exhibit of considerable interest was a model coal face with timber props in position, arranged by the neighbouring Wollaton Colliery. Here the visitor saw displayed the implements used for getting coal, and a collection of the different kinds of pit props made from varieties of wood—in the majority of cases of foreign growth. The coal comprised in this exhibit was sold during the week for the benefit of the Agricultural Relief of Allies Fund.

The Midland Agricultural and Dairy College, Kingston, Derby, had a building in which was displayed an exhibit illustrative of their work, but the usual section devoted to

Agricultural Education was, on this occasion, omitted. The Butter-making and Horse-shoeing Competitions were also discontinued.

In the absence of local contributions, the "Ring" events had of necessity to be somewhat curtailed, but, thanks to the continued support of the breed societies, the general classification was maintained up to the usual standard. For information as to entries, attention is directed to the comparative statement on page 199, and the statement of prizes, classes and entries on page 200. From the latter, it will be noticed that prizes were offered in 1915 for nearly thirty breeds of stock which had no separate classification in 1888.

For the most part, entries in all the sections were short in numbers, but it is generally agreed that, so far as the more important breeds are concerned, the animals at the heads of the classes, judged by the standards of previous Royal Shows, lacked nothing in quality.

The full awards of the Judges are, as usual, given in the Appendix.

Illustrations on this occasion are given of the Champions in the pig classes.

At the time of the auction sale of cattle the ports of the Argentine had not been formally declared open for English stock, and it was only on the following day that the official announcement was made through the Board of Agriculture. Prices were fairly satisfactory.

With the exception of the last day, Saturday, when he was unavoidably detained at Welbeck, the President was present daily throughout the week. On the opening day His Grace was accompanied by the Duchess of Portland, Lady Olivia Bentinck, Lord Desborough, Lord Charles Beresford, Admiral Sir William Culme Seymour and others. On the Saturday the Show was visited by Major-General Sir Pertab Singh, accompanied by the Earl of Harrington.

During the week the President visited every section of the Show, and on Friday, accompanied by Lord and Lady Middleton, he inspected the very interesting exhibition of specimens of work from the Royal Midland Institution for the Blind, Nottingham, and congratulated the secretary on the successful work of the institution as practically demonstrated by these inmates present at the Show.

The Council arranged for the free admission of wounded soldiers from the Nottingham and District Hospitals and Convalescent Homes, and on the last two days large numbers availed themselves of the privilege.

The fund for the Agricultural Relief of our Allies, initiated by the Society was greatly helped by the ladies of Nottingham.

[Continued on page 205]

The Nottingham Show, 1915.

199

(1) Admissions by Payment at Nottingham, 1915.

Day of Show	11 a.m.	1 p.m.	3 p.m.	5 p.m.	Day's total
Tuesday (5s.)	588	1,120	1,451	1,614	1,641
Wednesday (2s. 6d.)	3,528	8,366	11,225	12,234	12,321
Thursday (2s. 6d.; after 3 p.m. 1s.)	4,473	11,319	14,207	28,630	30,798
Friday (1s.)	6,518	14,237	20,839	25,293	26,034
Saturday (1s.)	7,085	15,105	25,986	32,521	33,089
Total Admissions					103,883

(2) Total daily admissions at the 1915 Show, compared with the previous six Shows and the Nottingham Show of 1888.

Prices of Admission	Nottingham, 1915	Shrewsbury, 1914	Bristol, 1913	Doncaster, 1912	Norwich, 1911	Liverpool, 1910	Gloster, 1909	Nottingham, 1888
Implement day (2s. 6d.)	—	—	—	—	—	—	—	1,826
Judging day (5s.)	1,641	2,166	1,709	1,377	878	2,492	1,392	1,671
First half-crown day	12,321	12,566	21,632	10,780	7,140	19,046	20,019	11,103
Second half-crown day	20,798	19,317	31,155	18,914	20,442	30,193	15,452	9,057
First shilling day	26,034	29,397	78,702	33,254	75,296	44,327	30,281	88,832
Second shilling day	33,089	14,357	45,890	10,814	17,739	41,154	21,132	35,438
Totals	103,883	87,805	179,148	90,139	121,465	137,812	88,366	147,927

¹ After 5 p.m. the admission was one-shilling.

² After 3 p.m. the admission was one-shilling.

Entries of Live Stock, Poultry, and Produce.

	Nottingham, 1915	Shrewsbury, 1914	Bristol, 1913	Doncaster, 1912	Norwich, 1911	Liverpool, 1910	Gloster, 1909	Newcastle, 1908	Nottingham, 1888
Horses	590	819	584	1773	1710	1688	1599	1624	816
Cattle	1902	1,272	1,138	1,080	1,085	1938	1,148	948	614
Sheep	575	1886	736	5734	746	772	1802	1085	537
Pigs	360	417	394	5420	416	381	433	312	148
Total	2,297	3,394	2,852	8,022	2,945	2,757	2,980	2,619	1,875
Poultry	1,286	1,373	1,436	1,242	1,218	1,195	754	768	343
Produce	461	895	685	550	670	701	765	416	441

¹ Exclusive of Double Entries.

² Exhibition of Cattle, Sheep and Pigs prohibited by order of Board of Agriculture

Shedding in Implement Yard.

Description of Shedding	Nottingham, 1915	Shrewsbury, 1914	Bristol, 1913	Doncaster, 1912	Norwich, 1911	Liverpool, 1910	Gloster, 1909	Newcastle, 1908	Nottingham, 1888
Ordinary	Feet 4,865	Feet 6,610	Feet 6,870	Feet 7,450	Feet 8,690	Feet 7,980	Feet 7,575	Feet 6,490	Feet 7,253
Machinery	2,853	3,405	3,065	3,125	3,035	2,555	2,420	2,385	1,807
Special (seeds, models, &c.)	2,884	3,472	3,680	3,363	3,907	3,420	2,861	2,960	1,863
Total	10,704	13,488	14,224	13,538	13,692	13,565	12,866	12,035	10,743
No. of Stands	341	439	513	442	457	454	457	389	368

**COMPARATIVE STATEMENT OF ENTRIES, ETC.,
AT THE TWO SHOWS HELD AT NOTTINGHAM IN 1888 AND 1915.**

HORSES AND CATTLE	1888		1915		SHEEP, PIGS, POULTRY, PRODUCE	1888		1915	
	Classes	Entries	Classes	Entries		Classes	Entries	Classes	Entries
HORSES :-					SHEEP :-				
<i>Prizes</i>	—	£1,580	—	£2,253	<i>Prizes</i>	—	£1,031	—	£1,031
Shire	10	187	11	110	Oxford Down	4	44	5	44
Clydesdale	7	64	9	53	Shropshire	4	171	5	68
Suffolk	5	37	8	24	Southdown	4	68	6	68
Hunter	12	161	12	109	Hampshire Down	4	20	6	6
Polo Pony	—	—	5	27	Suffolk	4	18	6	6
Cleveland Bay or	—	—	—	—	Dorset Down	—	—	3	3
Coach Horse	2	16	2	0	Dorset Horn	—	—	4	4
Hackney	6	44	7	32	Other Short Wools	3	21	—	—
Hackney Pony	4	18	2	5	Ryeland	—	—	5	5
Shetland Pony	—	—	2	14	Kerry Hill (Wales)	—	—	3	3
Welsh Pony	—	—	4	11	Lincoln	4	83	7	7
Riding Classes	—	—	1	15	Leicester	4	37	4	4
Harness Classes	3	19	1	50	Border Leicester	4	43	3	3
For Ponies	—	—	2	2	Wensleydale	—	—	2	2
Jumping	—	—	4	75	Leak	—	—	2	2
					Derbyshire Gilt-stone	—	—	2	2
					Kent or Romney	—	—	6	6
					Marsh	—	—	4	4
					Cotswold	4	15	2	2
					Devon	—	—	5	5
					South Devon	—	—	—	—
					Other Long Wools	3	8	—	—
					Dartmoor	—	—	3	3
					Exmoor	—	—	3	3
					Cheviot	—	—	3	3
					Herdwick	—	—	2	2
					Welsh	—	—	—	—
					Black-faced	—	—	2	2
					Mountain	—	—	—	—
Total for HORSES	49	546	82	598	Total for SHEEP	42	537	90	537
CATTLE :-					PIGS :-				
<i>Prizes</i>	—	£1,686	—	£2,570	<i>Prizes</i>	—	£280	—	£280
Shorthorn	8	152	13	200	Large White	4	32	8	32
Durham Shorthorn	—	—	5	101	Middle White	4	23	6	23
Lincolnshire Red	—	—	—	—	Small White	4	21	—	—
Shorthorn	—	—	8	50	Tanworth	4	20	6	20
Hereford	9	57	8	70	Berkshire	4	31	6	31
Devon	5	31	6	27	Black	4	15	6	15
South Devon	—	—	4	18	Lincolnshire Curly-	—	—	6	6
Longhorn	—	—	3	20	coated	—	—	—	—
Sussex	5	54	5	20	Total for PIGS	24	148	38	148
Welsh	5	50	4	12	TOTAL FOR STOCK	169	1,877	337	1,877
Red Poll	5	33	6	31	POULTRY :-				
Aberdeen Angus	—	—	6	44	<i>Prizes</i>	—	£294	—	£294
Galloway	—	—	5	21		49	343	152	343
Highland	—	—	3	—	PRODUCE :-				
Ayrshire	—	—	3	15	<i>Prizes</i>	—	£287	—	£287
Holstein-Friesian	—	—	6	33		35	365	87	365
Jersey	6	181	8	99					
Guernsey	5	65	7	64					
Kerry	—	—	3	14					
Dexter	—	—	3	19					
Dairy Cows	4	34	—	—					
Milk Yield	—	—	12	129					
Butter Test	—	—	2	71					
Total for CATTLE	52	646	115	1,081					

Grand Totals for
LIVE STOCK, POULTRY, and PRODUCE in 1915. } 576 Classes . 4,363 Entries . £9,029 * Prizes

* Animals exhibited in more than one class are here counted as separate entries.

* Including 268 for Farm Prizes, £150 for Horticultural Exhibition.

(Continued from page 198)

who undertook a most successful "Flag" collection in the Showyard. The sum of 7*l.* 15*s.* 4*d.* was collected during the week. Included in this amount was 55*l.* 6*s.* 9*d.* subscribed by the herdsmen and shepherds present at the Show, and 43*l.* 10*s.* 0*d.* was realised by the sale of the coal in the Wollaton Colliery Company's exhibit.

The exceptional conditions prevailing in the country in consequence of the war prevented His Majesty the King from visiting the Show.

The Railway Companies were unable to run excursion trains or issue cheap tickets, and consequently the number of visitors was considerably less than might have been expected in normal conditions.

To the Mayor of Nottingham (Mr. Alderman Gregg), the Sheriff (Mr. Conncillor Small) and the other Members of the Local Committee, the Society is much indebted for their exertions in connection with the Show, and mention must also be made of the valuable services rendered by the Local Honorary Secretaries, Mr. Board, Town Clerk, and Mr. Bradwell—the latter gentleman being much in request in connection with the preparations for and during the Show.

THOMAS MCROW.

16 Bedford Square,
London, W.C.

THE FARM PRIZE COMPETITIONS.

THE farm prize competitions held by the Society in connection with the Nottingham meeting of 1915 embraced the counties of Derbyshire, Nottinghamshire, and Leicestershire. On six previous occasions have the summer meetings taken place within one or other of these counties, but only once, namely, when the Society last visited Nottingham in the year 1888, was a farm competition held. It was open to the same three counties, with the addition of that of Lincolnshire, and the attention of members may be called to the very interesting reports on the farms entered, which appear in the *Journals* for 1888 and 1889. By the time of the Leicester meeting, in 1896, these useful competitions had been discontinued, nor had they been re-established when the Society visited Derby in 1906, but the Journal for the former year [Third Series, Vol. VII. (1896), page 520] contains a report on certain selected farms of the district.

The three counties under consideration have many distinctive features, and present some striking contrasts. Famous the world over for their stately homes, Welbeck Abbey,

Clumber, Rufford Abbey, Chatsworth, Belvoir Castle, and many more, they also include, on the south, the finest grazing district in the country, in the centre, one of the busiest industrial and mining districts, and a few miles away to the north, one of the largest stretches of wild hill country that England can show. Travelling through the three counties, from south to north, the successive impressions received might be summed up in the words "grass-land, plough-land, coal-mines and mountains," but of course this is only broadly descriptive. It is a district of great landowners, and the advantages accruing to agriculture from the long-sighted systems of management most commonly met with on large properties are everywhere apparent.

The three counties are roughly divided into four parts by the river Trent, running from west to east, and by its tributaries the Derwent and the Soar. Coming from the south, Leicestershire is entered near the top of the Soar valley, between Lutterworth and Market Harborough. This valley runs north, through Loughborough, and then slightly westwards till it joins the Trent valley, whilst to the east, south of Loughborough, it receives a branch from Melton Mowbray, enclosing between itself and the county boundary the wonderful pastures of "High Leicestershire." These descend sharply to the northwards into the Vale of Belvoir, and onwards to the flat land south of Newark, between the Trent and the Lincolnshire boundary, where arable farming becomes general. To the west of the Soar valley, and south of the Trent, lies the high land well known as Charnwood Forest, still largely in timber. Crossing the Trent, and between that river and the Derwent the great industrial part of the district is encountered, with Derby and Nottingham on the south, Chesterfield and Worksop on the north, Sherwood Forest and the Dukeries on the east, and the beautiful Derbyshire hills just beginning to rise on the west. Going north from Nottingham through the middle of this district there is a constant succession of mining villages—Shipley, Butterley, Clay Cross, Grassmoor, Sheepbridge, Staveley, Clowne, Bolsover, Langwith, to mention a few of them, names made familiar all over England on coal trucks. The air is never free from smoke, and other reminders of the activity underground are met with on every side. It is of especial interest to note that in some parts the mines are already worked out and the land is coming back to agriculture. Indeed, the question of the cultivation and improvement of the great spoil-heaps is already calling for attention. The style of farming is entirely determined by the markets, and, as is well known, the dairying industry assumes great proportions, not only for the supply of milk in the district, but also for London

and other markets. It is recorded¹ that in 1872 940,000 gallons of milk passed over the Midland Railway system from Derbyshire; in 1880 the amount was 5,500,000 gallons; in 1888 it had risen to 8,393,292 gallons, whilst in 1914, the writer is informed by the General Manager of the Company, the total was 7,092,900 gallons distributed as follows:—

2,985,780	gallons to London district.
1,767,105	" Manchester district.
1,309,560	" Sheffield "
303,540	" Birmingham "
726,915	" other districts.

West of the Derwent, and enclosed between this river and the Lancashire and Yorkshire boundaries lies the hill country of Derbyshire, more celebrated for scenery than for agriculture, and it is to be noted that there were no entries of farms from this region in the competition.

As to the live stock, the Shire is the only breed of heavy horse to be met with, and whilst many are bred all over the district, there are also one or two particularly noted studs. A few thoroughbreds are to be found, the most important stud being that of the Duke of Portland, at Welbeck, which has produced many famous winners on the turf. Hunters, too, are bred fairly generally in the district, particularly by the sport-loving farmers of Leicestershire. Cattle are represented almost exclusively by the Shorthorn, both Coates' and Lincoln Red, the latter being particularly prevalent in Nottinghamshire, and on the Lincolnshire side of Leicestershire. The Leicestershire graziers like the big red bullocks, but besides the Shorthorns they will buy all sorts, and large numbers of Herefords, Aberdeen Angus, and Cross-breds are bought in. Those not finished on the grass are sent into Norfolk and Lincolnshire straw-yards for the winter. This is not the place to go far into history, but it is permissible to recall the time when the Longhorn was the prevailing breed of the Midlands, and to pay a grateful tribute to Bakewell, of Dishley, whose success in improving this breed, and even more the Leicester sheep, was the beginning of the improvement of live stock throughout the country. As regards sheep, Leicester, Lincoln and crosses of these breeds with a Hampshire or Oxford Down are commonest, but a good many Suffolks, pure and cross-bred, are to be met with. The butchers like them, and they seem to be on the increase. In the hill county of Derbyshire, the little-known Derbyshire Gritstone sheep is met with. The breed society was formed in 1906. Pigs are mainly Whites, the Lincoln Curlies on the eastern side, and Large Whites in other places, but Large Blacks and Berkshires are also found, and some Tamworths in

¹ Journal R.A.S.E., Second Series, Vol. XXV. (1889), page 44.

the southern district. On some of the large estates a great deal of benefit has accrued from the practice of the landlord to supply stud animals, both stallions and bulls, for the use of his tenants, and the quality of the live-stock on the farms is noticeably high.

It is noteworthy that no cheese-making was practised on any of the prize-winning farms, though Derby and Leicester cheese were commonly offered at the hostleries of the locality. Both of them appear to be of little more than local repute; they can be obtained only with difficulty in London, though there is certainly no better pressed cheese on the market than a good Leicester, and it is surprising that there should not be a greater demand for it amongst those who appreciate good English fare. Stilton, the king of cheese, is produced on a considerable scale in Leicestershire. It seems possible that on the whole there is a decline in the manufacture of cheese, the sale of new milk being more profitable where it can be effected. Moreover, the tendency of the time is towards the centralisation of manufacture, and the farmer who formerly made cheese now probably sends his milk to a cheese factory, co-operative or proprietary. Factories were first started in 1863, at a time when American competition was being severely felt, and they are now fairly numerous. The milk producer has other markets, too, for his milk. In Derbyshire considerable quantities are taken by the great condensing companies, and recently a demand has arisen on the part of the manufacturers of milk chocolate, one dealer alone being reputed to contract for 5,000 gallons weekly for this purpose.

A study of the agricultural statistics for the three counties brings out very clearly the changes in agriculture during the past forty years, a period full of interest to the student of agricultural economics, for it covers the whole time of the agricultural depression, the good days before it, and the recovery which set in some fifteen years ago.

Fig. 1 shows very clearly in the form of a chart the changes in arable land and permanent grass. In each of the three counties, as in the rest of England, there has been an enormous reversion to grass land, but whereas this tendency has been continuously progressive, and almost uniformly so in the case of Leicestershire, it will be noticed that it was most pronounced in Derbyshire and Nottinghamshire during the period 1866-1896, and that in the case of Derbyshire there has been no permanent increase in the total area under grass since that date. Nottinghamshire of course stands out as the premier arable county of the three, and it has already been noted that all the prize-winning farms in the arable classes were situated within its boundaries.

Considering the cropping of the arable land, Fig. 2 illustrates the tendencies in the county of Derby. All the corn crops, turnips, and rotation grasses show a fall, in keeping with the decline of arable land, but whereas wheat is 45 per cent. down, the barley acreage has been reduced by some 57 per cent., and oats by 28 per cent. only. The rotation grasses have fallen about 42 per cent., and turnips 30 per cent. The figures for

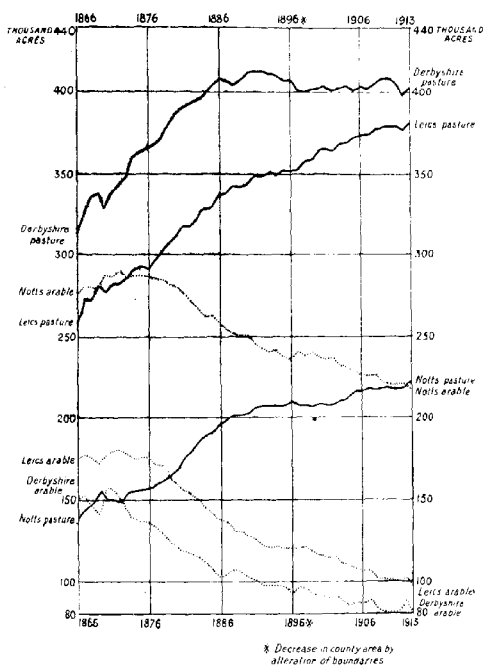


FIG. 1. Derbyshire, Leicestershire, and Nottinghamshire. Variations in the acreage of arable land and permanent grass.

vetches, lucerne, &c., do not convey much, as they should be separated before any impression can be got of the changes in these crops. As they stand they show a heavy decline, though it is quite possible that the lucerne acreage may have materially increased. Potatoes show little change, but there is

a satisfactory increase in mangolds, the acreage under this crop having risen by some 300 per cent.

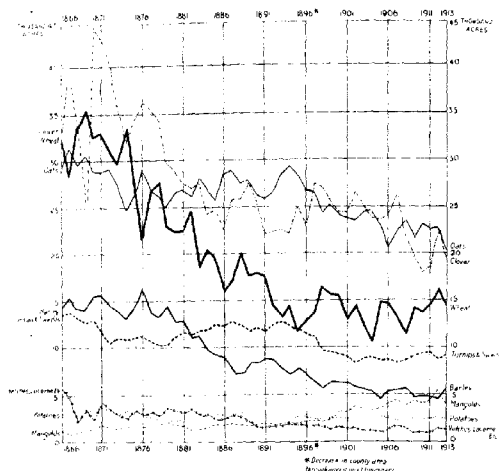


FIG. 2.—Derbyshire. Variations in the acreage under crops, 1866—1913.

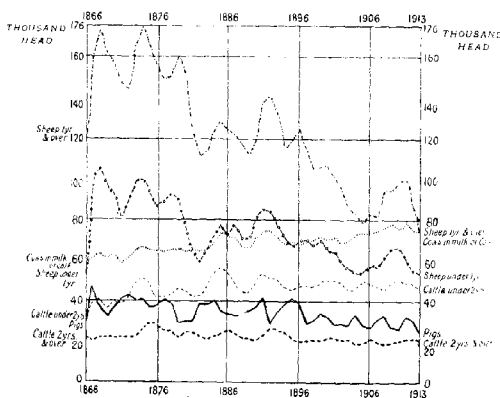


FIG. 3.—Derbyshire. Variations in the numbers of Live Stock, 1866—1913.

The third chart shows the variations in the live stock of this county. The decline in the arable land and the reduction of the area under roots are reflected in the fall in the sheep stock. At the same time the increase in grass and in the mangold crop has its complement in the very considerable increase in the number of cows in milk. The rise in the dairying industry of Derbyshire is common knowledge, but the statistics confirm the figures for the milk traffic already given, (p. 203) for the last few years do not show a proportionate increase, and the suggestion is that production has caught up the demand, anyhow for the time being.

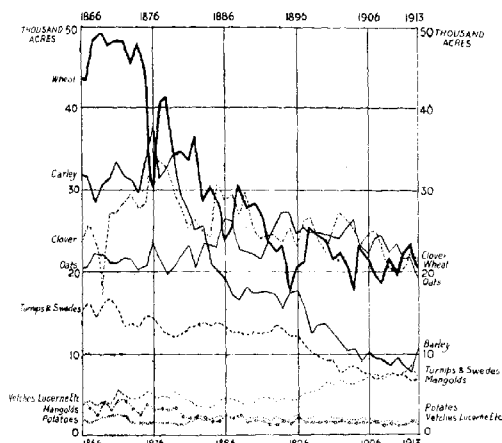


FIG. 4.—Leicestershire. Variations in the acreage under crops, 1866—1913.

Fig. 4 shows the changes in crops in Leicestershire. These differ rather widely from the changes in Derbyshire, indicating the difference in the husbandry of the two counties, for whereas the wheat area has decreased by some 54 per cent., and the barley by some 65 per cent., thus corresponding fairly nearly, the oats have fallen less than 10 per cent., and rotation grasses about 12 per cent. Turnips, on the other hand, have fallen 56 per cent., whilst once more mangolds are the only crop to show an increase, though in this county it is only 75 per cent.

The changes in live stock in Leicestershire follow those of Derbyshire in a general way to the extent that there is a heavy decline in sheep, with a corresponding rise in cattle, cattle two

years and over having increased 71 per cent., cattle under two years 66 per cent., and cows in milk by 50 per cent. But whereas in Derbyshire the changes have been fairly progressive, in Leicestershire the great fall in the sheep stock took place during the first twenty years, and the rise in the cattle-over-two-years during the same period. Since 1886 the tendency

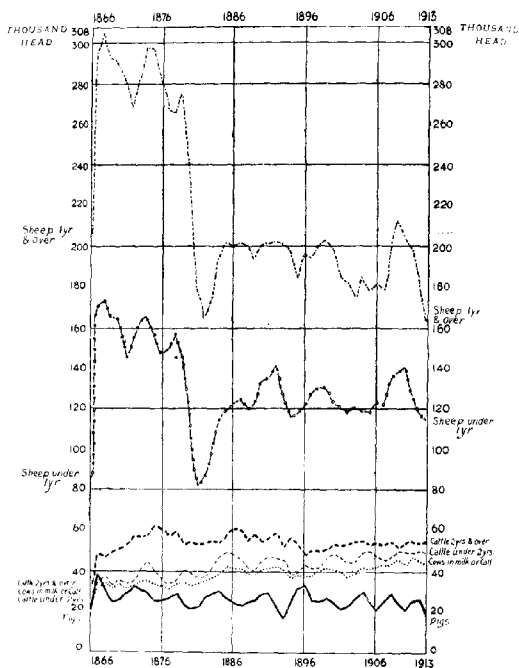


FIG. 5.—Leicestershire. Variations in the numbers of Live Stock, 1866–1913.

seems to have been a slow but steady decline in sheep, which has been replaced by dairy stock and young cattle.

Coming last to the Nottinghamshire statistics, the changes in this arable county are of some interest. Wheat has fallen some 48 per cent., whilst barley is down only 30 per cent., and oats show actually an increase of 94 per cent. No doubt the oat acreage has been increased at the expense of wheat, and it

will be observed that the higher prices which have prevailed, more or less, since 1906 have arrested the decline in the wheat land and likewise the increase in the land under oats. The demands of the maltsters at Burton, Newark, and other places

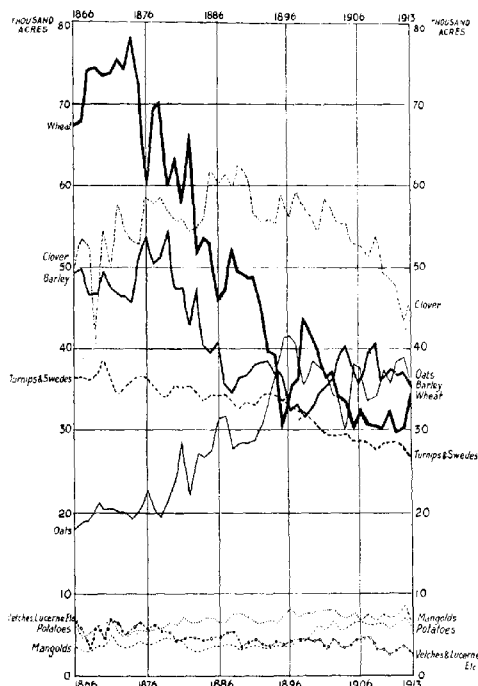


FIG. 6.—Nottinghamshire. Variations in the acreage under crops, 1861-1913.

may explain the comparatively small decline in the barley area. Mangolds have increased about 100 per cent.

The changes in the live stock of Nottinghamshire reflect the changes in the cropping, for the fall in the sheep stock, though steady, has been more gradual than in the other counties, and shows a decided tendency to turn at the present time. In correspondence with this the increase in cattle, both dairy stock and otherwise, has been very steady and not so

marked, whilst showing at the present day considerable hesitation.

This review of the statistics of the three counties is of necessity very superficial, and figures for agricultural returns must always be accepted with a certain amount of reserve. They are collected in the summer, and therefore take no account of the large numbers of calves, sheep and pigs which are born, fed and slaughtered within the subsequent twelve months. For a similar reason they take no account of the great movements of sheep occurring every autumn from the big breeding districts of Scotland, Wales, and other parts of the

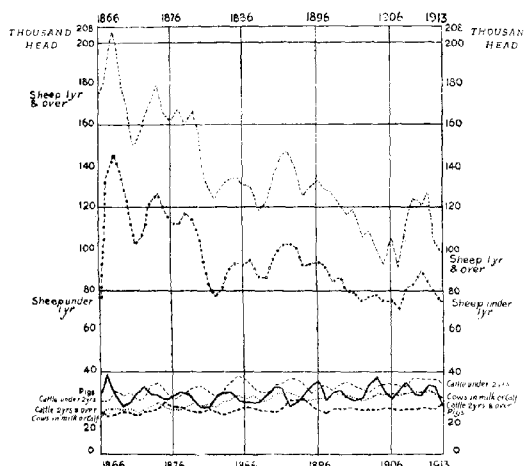


FIG. 7.—Nottinghamshire. Variations in the numbers of Live Stock, 1866—1913.

country into the arable districts of England. At the same time a study of the figures over a series of years reveals very clearly the trend of agricultural progress, and if their use were more generally understood and practised they should be of the utmost assistance both to the landlord and farmer in directing attention to the stability or otherwise of the different branches of agricultural production, and to the development of the most profitable lines.

Coming now to this year's competition, prizes were offered in six classes, three for arable farms, and three for grazing or dairy farms, and this classification is certainly the best that could have been devised. Considering the entries, reference

[Continued on page 214]

Name of Competitor	Name of Landlord	Extent of Farm		Rent per Acre	Labour & Till per Acre	Soil	Tenancy	Remarks
		Arable Acres	Total Acres					
CLASS I. ARABLE FARM, 400 acres or over, of which approximately two-thirds must be arable.								
1. William Lamin, Jecton House Farm, Bescot Park, Arnold, Notts.	His Grace the Duke of St. Albans	601	714	15s. 5d.	17s. 6d.	Gravel, sand and blowing sand	Yearly	2nd Prize
2. F. B. Williams, Green-sandish Lodge, Edwinstowe, Newark, Notts.	His Grace the Duke of Portland	476	1184	10s. 7d.	40s. 6d.	Sand	Yearly	1st Prize
CLASS II. ARABLE FARM, 200 acres and under 400 acres, of which approximately two-thirds must be arable.								
3. Herbert Hopkinson, Burragge Farm, Muskham, Newark, Notts.	The Lord Middleton	240	145	18s. 2d.	18s. 1d.	Gravel over sand	Yearly	3rd Prize
4. John Henry Lamin, Top House Farm, Bescot Park, Arnold, Notts.	His Grace the Duke of St. Albans	284	49	19s.	25s. 1d.	Half clay-loam, over clay; half sand over gravel	Yearly	1st Prize
5. Arthur Stretton, Sibthorpe, Newark, Notts.	His Grace the Duke of Portland	147	70	18s.	22s. 3d.	Clay marl	Yearly	2nd Prize
CLASS III. ARABLE FARM, 50 acres and under 200 acres, of which approximately two-thirds must be arable.								
6. Thomas Bartholomew, Creswell, Mansfield, Notts.	His Grace the Duke of Portland and Mrs. Ann Day	49	11	(not stated)		Limestone	Yearly	
7. Richard Johnson Fox, Sibthorpe, Newark, Notts.	His Grace the Duke of Portland	126	31	18s. 3d.	44s.	Clay loam	Yearly	1st Prize

Name of Competitor	Name of Landlord	Extent of Farm Arable Acres Grass Acres Total Acres	Rent per Acre	Labour Bill per Acre	Soil	Tenancy	Remarks
8. William Hunt, Town End Farm, Bilsborrow, near Chorley.	His Grace the Duke of Portland, S.W. Skelton, Esq., and self	80 30½ 110½	25s. 9d.	11s. 10d.	Mart and clay	Yearly	Very Highly Commended
9. Luke Lilley, Red Hole Farm, Watnall, Notts.	The Trustees of the Earl Cowper	54 23 77	23s.	52s.	Lime-stone	Yearly	
10. William Peel, Dartnolds Farm, Worksop, Notts.	Shrocks, Colliery Co., Ltd.	144 51 195	25s.	32s.	Part limestone, part clay	Yearly	3rd Prize
11. Reuben Shelton, Grange Farm, Raddington, Notts.	The Messrs L. & A. Paget	67 104 171	22s. 8d.	21s.	Sandy loam over new red sandstone	Yearly	2nd Prize
CLASS IV. GRAZING OR DAILY FARM. 400 acres or over, of which approximately two-thirds must be permanent grass.							
12. William Thomas Hay, Tar Langton Manor, Leicester.	H. T. Mills, Esq., the Rev. Hugh Barry, the Rev. A. G. Agard-Butler and self	0 700 700	32s.	9s. 6d.	Clay loam over clay	Yearly	1st Prize
13. Hugh C. and John Holm, The Grange, Carlton, Leicestershire.	Sir Geoffrey Palmer, Bart., and the Rev. A. Blackett	126 405 531	19s. 7d.	18s. 10d.	Clay loam over clay	Yearly	2nd Prize
14. Tom Marriott, Hall Farm, Edmondthorpe, Oakham.	Rev. W. Pochin, Esq.	130 358 488	20s. 10d.	12s. 4d.	Clay and red loam over gravel and ironstone	Yearly	3rd Prize
15. George Sturtin, Ruzhincote, Barton-on-Trent	The Marquis of Anglesey, and the Earl of Carnarvon	377 229 606	17s. 8d.	43s.	Clay loam over clay	Yearly	

Name of Competitor	Name of Landlord	Extent of Farm		Rent per Acre	Labour Brought per Acre	Soil	Tenancy	Remarks
		Arable Acres	Grass Total Acres					
CLASS V. GRAZING OR DAIRY FARM. 200 acres and under 400 acres, of which approximately two-thirds must be permanent grass.								
16. Exors. of the late F. J. Stanhope, Claxbrooke, Lutterworth.	Trustees of Stoneleigh Schools and selfs.	50	260	310	—	—	—	1st Prize
17. Herbert Sutton, Smeaton, Abercrombie.	The Earl Howe	93	227	320	22s. 9d.	26s. 3d.	Yearly	2nd Prize
CLASS VI. GRAZING OR DAIRY FARM. 50 acres and under 200 acres, of which approximately two-thirds must be permanent grass.								
18. William Clay, Bindholme Farm, Chesterfield.	Capt. Philip Hancock	40	126	166	17s.	13s.	Yearly	2nd Prize
19. Arthur Miner, Streeton, Alfreton, Derbyshire.	W. G. Turbutt, Esq.	28	43	71	29s. 6d.	(Farm worked by family)	—	
20. Harry Haywood Sheppard, Wyandotte Farm, Shuttlewood, Chesterfield.	His Grace the Duke of Portland, W. Hunt, Esq., and Mrs. White	40	63	103	22s. 1d.	21s. 4d.	Yearly	
21. Philip Walker, Parkfield Farm, Shipley, Lkston.	A. E. Miller-Mundy, Esq.	8	102	110	(not stated)	Strong clay	Yearly	1st Prize

[Continued from page 210.]

has been made already to the great estates which characterise this part of England, and many of these are well represented. The Welbeck estate contributed no fewer than six competitors in the various classes, being nearly 30 per cent. of the whole, and their successes must have been very gratifying to the President of the Society. The total number of entries is, however, very disappointing, for in a competition open to three counties, with classes arranged to suit all sizes and types of farms, only twenty-one farmers could be found to compete. This is a decided falling off from recent years, nor can it be explained by the influence of the war, for the entries were made before its effects on the labour market and in other directions had been felt. It has been decided that no competition is to be held in connection with the Manchester Show next year, but if this most useful branch of the Society's work is to be continued when more settled conditions once more prevail, it may well be that the Committee will have to consider the question of withholding prizes in those classes which do not receive adequate support. The effect of the break-up of estates which began five years ago is reflected in the increase in the amount of land occupied by owners; in the case of tenancies, all are from year to year, and in some of them, six months' notice is substituted, by agreement, for the twelve months provided by statute.

ARABLE FARMS.

CLASS I.—400 acres or over.

The class for large arable farms attracted only two entries, both of them from Nottinghamshire, in fact, all the entries in the arable classes are from this county. The Judges awarded the first prize to Mr. F. B. Wilkinson, of Cavendish Lodge, Edwinstowe, Newark. Mr. Wilkinson is well-known as a Judge and as an exhibitor at most of the more important agricultural shows of the country. The Judges' report states: "We found this farm in a first class state on all our visits. The arable land was clean and in good order, the homesteads and buildings well cared for. On our first visit the corn and hay had been well secured. A large dairy herd contained a good class of dairy cattle, both non-pedigree, Shorthorns and Lincoln Reds. The pedigree Shorthorns were of excellent quality, many of them fit for exhibition. The working horses were all young and a good sound lot. The lambs and pigs were also good, in fact, we found everything well managed, and had no difficulty in awarding the first prize to this farm." Unfortunately, Mr. Wilkinson was unavoidably compelled to cancel the appointment made with him for the writer to

inspect the farm for the purposes of this Report,¹ and another visit could not be arranged, so that it is not possible to supplement the Judge's note.

The second prize in this class went to the only other competitor, Mr. William Lamin, of Bottom House Farm, Bestwood Park, Arnold. The farm lies to the west of the Nottingham-Mansfield road, about six miles north of the former, and eight miles south of the latter town. The situation is the highest in the locality, and colliery chimneys meet the eye in almost every direction, whilst the air is rarely free from smoke. Here is a large tract of land, running right away from the road, composed of a blowing sand filled with pebbly stones, which in many places would go derelict, but which, in the hands of a very energetic and capable man, is contributing its full share to the country's food supply. The homestead is unfavourably placed at one end of the farm, and the buildings are none too good, neither are they well planned. There is a second set on the western side. The house is very pleasantly placed.

Mr. Lamin follows no fixed rotation ; the arable land extends to 601 acres, and was cropped this year as follows :—

60	acres roots.
76	" potatoes.
130	" barley.
146	" seeds.
189	" oats.
<hr/>	
601	

The management may be said to be based upon a long seed-ley of deep-rooting plants, which supplies the humus in which this soil is so deficient, and helps to fix the loose sand. Fertility is further kept up by heavy dressings of artificials and frequent liming. The seeds are followed by light but regular crops of corn, and by potatoes. The tenant attributes the whole possibility of success to his seeds. These are a sort of Elliott's mixture, consisting of cocksfoot, 9 lb. ; tall fescue, 4½ lb. ; tall oat-grass, 3 lb. ; crested dogstail, 1 lb. ; burnet, 6 lb. ; chicory, 4 lb. ; sheep's parsley, ½ lb. ; yarrow, ¾ lb. ; giant perennial white clover, 1½ lb. ; bird's-foot trefoil, 1½ lb. ; Garton's perennialised red clover, 4 lb.

It might be expected that the chicory would get too strong, but this seems to be prevented by the vigorous growth of the clover in the first year. The first cut is hayed, and in this great industrial district hay is evidently a good thing to go for, whilst the heavy dressings of artificials not only prevent the exhaustion of the soil through selling off hay, but actually add

¹ All the farms reported upon were inspected in the month of July.

to the fertility. Stock do well on the aftermath from this mixture, which holds a sward for three years and is then broken up for oats. The difficulty which might be expected from the turf fibre is overcome by ploughing so as to bury it completely, and by cultivating with chisel-pointed harrows. Mr. Lamin also follows the practice of ploughing round and round, so that there is no opening and finishing to be done. The oats are quite a paying crop, an average of about eight quarters being expected, and they generally receive about $1\frac{1}{2}$ cwt. sulphate of ammonia, 4 cwt. dissolved bones, and $\frac{1}{2}$ cwt. muriate of potash. Potatoes follow the oats, the turf being then thoroughly rotted. They receive 10 cwt. ground lime, 2 cwt. sulphate of ammonia, 8 cwt. dissolved bones, 10 cwt. kainit (or 2 cwt. muriate of potash), but no farmyard manure if there has been only one corn crop since seeds. If two corn crops have been taken before potatoes, or if the land seems to need it, about 10 tons of dung are added.

Mr. Lamin used to bring back large quantities of town manure, but abandoned the practice on account of the weeds introduced with it. The farm is, indeed, extraordinarily clean, even annual weeds being entirely absent. This is doubtless due to the practice of working the stubbles, a very vital matter on this light land, for the conservation of moisture. The tenant has proved that sheep are not essential in the management of very light land, as is commonly held. Indeed, it would be difficult for any sheep farmer on such a farm to show a turnover approaching Mr. Lamin's. There are no sheep at all on this farm, and all the roots are carted off and fed to bullocks on the grass. The mangolds are fed, during the summer, to bullocks on the seed leys, a rather unusual practice, but one more remarkable still is the custom of feeding "pig" potatoes to them likewise.

On this large arable farm, live stock occupy a place of subsidiary importance. About sixty bullocks are fed during the winter, most of them brought in, but, as already stated, no sheep are kept, nor any pigs.

In this great industrial centre the labour question might well appear alarming, but Mr. Lamin has studied the organisation of farm labour and his success in this direction raises the suspicion that the difficulty so commonly complained of (speaking, of course, of pre-war times) may be due as much to lack of study and organisation on the part of the farmer, as to incompetence or indifference on the labourers' part, or to an actual shortage. Mr. Lamin does not spare himself, for during the potato harvest he "gangs" his men in person. Some threshing results for oats on his farm seem worth recording, for during one and a half days on 21st and 22nd August, 1911,

he threshed 218 quarters exclusive of tail corn. The oats were threshed straight out of the field.

In his wife, Mr. Lamin has a most enthusiastic partner, and Mrs. Lamin has a knowledge of the science and practice of agriculture which must contribute in no small degree to their joint success.

CLASS II.—200 acres and under 400 acres.

The first prize in the intermediate class for arable farms was awarded to Mr. John Henry Lamin, the younger brother of the tenant of the holding just described. The farm, Top House Farm, Bestwood Park, Arnold, likewise forms a part of the Duke of St. Alban's estate, it adjoins the Bottom House farm to the south, and the soil conditions of the two holdings are very similar. The house and buildings adjoin the road, and the latter are well arranged for feeding, though far from being model buildings. Mr. Lamin follows an eight-course rotation, seeds being kept down for three years :—roots, barley, seeds, wheat or oats, potatoes. The cropping this year was approximately as follows :—

46	acres	roots
36	"	potatoes
32	"	barley
18	"	first-year seeds
35	"	second-year seeds
38	"	third-year seeds
18	"	wheat
36	"	oats
4	"	rhubarb

The root crops were beautifully clean and even, and the five acres of mangolds, grown for a local competition, were wonderful. The tenant has picked out the best piece of land on the farm for them, and grows mangolds year after year so as to ensure a good crop. This is not good theory, but it is excellent practice where heavy crops are wanted, as has been demonstrated at Rothamsted. The barley was thick, following very heavy sheeping, and suggested quantity rather than quality. It is Mr. Lamin's practice to take two barley crops after roots, the second being helped with artificials. This year a field of "war" wheat was introduced into the cropping. It was on a light hill-top, and surprisingly good. The oats, too, were a tremendous crop for the land, but perhaps the most successful crop was the potatoes. In the middle of July the rows were already hidden, and they looked likely to yield all of the ten tons at which the tenant estimated the crop. It was grown with the aid of a big dressing of "barley manure," which shows once more the worthlessness of merchants' descriptions of their mixed manures. An interesting feature of

the arable farming is the cultivation of rhubarb for forcing. The plants stand in the ground for two years, and are then got up and packed in a long, low shed, without windows, and heated with hot water pipes.

The grass land on this farm enabled a good judgment to be formed of what the land would be like but for energetic and progressive management. There was a field, too hilly to plough, grazing a few young horses, which the tenant estimated to be worth five shillings per acre. On the other side of the hedge was a seed-ley full of keep, and the two fields demonstrated that only intensive farming has made this farm what it is. None of the permanent grass was good, and the meadow was full of yellow rattle, suggesting the presence of underground water.

Mr. Lamin milks a herd of about twenty cows, a fine herd which attracted the commendation of the Judges. Milk records have been kept for one only, who proved a thirteen-hundred gallon cow, and the tenant would be well advised to extend the recording to the rest of the herd. The sheep are Suffolks, a breed which Mr. Lamin has adopted, in common with others in his locality, because the Nottingham butchers are very partial to them. A good many pigs are kept on this holding to utilise the waste potatoes, all of which are steamed before being fed. Several horses are bred, light ones for most part, and some of the poor grass-land seems well adapted to them.

Mr. Lamin is a great believer in the economic value of good roads and good hedges. The occupation road would put to shame many an English main road, whilst the hedges were all extraordinarily good, having been trimmed and the weeds all cut back from the hedge bottom before harvest. This latter point is of considerable importance, for a good hedge bottom is impossible if the grass and weeds are allowed to grown through it all through the summer. It is quite another question whether we are right in spending so much time and money on the maintenance of so many hedges. A good hedge is better than a bad one, but in the arable districts of England it may be argued that no hedge would often be better still, and with the development of the use of machinery for farm operations of all kinds an extensive grubbing of hedges will probably follow.

Unfortunately the writer was unable to arrange a date convenient to the winner of the second prize in this class. Mr. Arthur Stretton, to inspect his farm at Sibthorpe, near Newark. This farm lies six miles south of Newark, twelve miles east of Nottingham and about the same distance west of Grantham. It is about two miles to the east of the old Fosse Way, the fine old thoroughfare, linking up the Midlands and

the West of England, which had fallen into disuse in certain districts, and which has been remade as one of the finest roads in the country with the assistance of the Road Board. The farm lies very conveniently for working, being well served with roads on which most of the carting can be done. The land is strong and steely, the sort of stuff which would be very troublesome to work if not very carefully managed. Mr. Stretton does not follow any strict rotation but generally speaking roots, peas or beans are followed by two white crops, in the second of which small seeds are sown, and these after lying one year and being mown once are broken up again for oats, peas or wheat. This year the wheat particularly was a very fine crop, the oats fair, and the mangolds a good plant. Mr. Stretton fully appreciates the value of lime on this land, for ground lime and basic slag, both on grass land and plough, are the principal artificial manures used. The farmyard manure goes mostly on the root crops and the second white straw crop, whilst any that may be left is applied to the young seeds.

As regards live stock this is distinctly a breeding and rearing farm. The cattle include twenty-one cows, and about thirty-six of other descriptions, practically all home-bred and of good average quality. The sheep are a Shropshire-Oxford cross, which is not commonly met with, and the practice is to use a pure-bred Oxford tup to the ewes got by a Shropshire, and *vice versa*. The ewes are a particularly good lot. But perhaps the horses call for most attention on this holding. All the work horses are pedigree shires and are used for breeding, three of them having very promising foals. Mr. Stretton keeps a shire stallion for himself and his neighbours. The horse in use last season was *Cotheridge Stewell*, 16080, a bay, foaled in 1895, and the winner of many prizes in London and elsewhere. There are one or two Hackney mares. On this holding, also, importance is attached to the maintenance of gates and fences in good condition, and the management all round is good.

The third prize in this class went to Mr. Herbert Hopkinson, of Burrage Farm, Muskharn, Newark, being about three miles due north of the latter place. The holding lies in a bend of the river Trent, and is intersected by the Great Northern Railway's main line. It is by no means an ideal holding for management, and certainly not for exhibition, for the house and buildings are at one end of it, and it stretches southwards from them for a considerable distance having regard to its extent. The buildings are very good, with open yards and shelter-sheds for wintering the stock which are to go out on to the grass in the spring, and covered yards for those

brought up in the autumn to be finished. The cake house, machinery and feeding arrangements are all very nicely planned.

The arable land, as was noticed on several farms in this neighbourhood, is hungry and difficult to work. Mr. Hopkinson works it on a five-years course, roots and barley being followed by seeds, one-third of which is left down for two years. The first year seeds are followed by wheat, followed by green peas, and the second year seeds give place to oats and potatoes, after which the fallow crops begin the rotation again. Some catch cropping is practised, which is not general in this district, the wheat stubbles being sown with rye and tares grazed with the roots, whilst the green peas, which are mostly pulled in June are followed with mustard and tares. The cropping this year was as follows:—

54	acres	roots
55	"	barley
68	"	seeds
30	"	wheat
12	"	green peas
15	"	oats
1	"	potatoes

The root land included four acres of French marrow kale, a crop rapidly coming into favour for sheep, giving, as it does a large quantity of keep, and being free from the objection to other varieties of kale in that its thick fleshy stalks are entirely consumed by the sheep. It may be noted that these stalks, peeled and boiled, provide one of the best of winter vegetable dishes.

The land was clean and the crops relatively heavy. The natural difficulties are overcome by the tenant with considerable skill, the heavy caking with sheep, being balanced and supplemented with potash and phosphate. There is some beautiful grass land by the river, and Mr. Hopkinson had a trial plot on his meadow for the Nitrate Committee with remarkable results, illustrating the advantages that might be expected to accrue if the practice were more general.

Most of the cattle are bought as stores and caked through the winter; they are also caked on the grass, and the best of them go off by the first week in July. Others follow through the summer, and the remainder are finished in the yards in the first part of the following winter. The system is thoroughly sound; possibly the beautiful grass might be allowed to do a little more and the cake bill reduced, but Mr. Hopkinson likes to have the best stock in the market, even though it is the putting on of that last touch of bloom which costs the money. A breeding flock of 160 useful ewes is kept. All shearing is done with a machine, and the tenant maintains that one

unskilled man and one good shearer are as good as any two hand shearers, and will produce an extra $\frac{1}{2}$ lb. of wool per sheep. He thinks that machines would be in more general use if the manufacturers would send an experienced shearer round with them to explain their use, instead of a mechanic as is now customary.

Mr. Hopkinson is his own foreman and his own shepherd, and can lead his men at any work on the farm. Finally, it should be remarked that the landlord had incurred no special expense to put the homestead into prize order—an example very much to be commended.

CLASS III. — 50 acres and under 200 acres.

In the class for small arable farms first prize was awarded to Mr. Richard Johnson Fox, of Sibthorpe, near Newark, the parish which furnished the winner of the second prize in the class last described—in fact, the two farms adjoin. It is a wonderfully compact holding, and all the fields except two open on to a hard road, an advantage which cannot be over-estimated in the efficient working of the farm. As a set off, the buildings are placed in a corner of the holding, and are none too conveniently arranged, but they have been well adapted by means of little covered yards for the main object of the live stock management, namely, the production of baby beef. The roofs over the yards are space boards, and after twenty years service they still looked sound, but the boards had been put on too far apart, and the rain was apt to find its way through.

Mr. Fox follows a six-course rotation, and his cropping this year was approximately as follows :—

15	acres roots.
7	" barley.
24	" winter oats.
34	" seeds.
61	" wheat.

The land is steeley stuff which would very soon become master in less skilful hands. The system is to reduce the expensive root-fallow to a minimum, by concentrating great attention on it and by the practice of "pen-fallowing" the clover seeds. This consists in breaking up a two year's ley early in the second season, so that it may be worked and cleaned, before wheat sowing. Mr. Fox fully appreciates the value of lime on this land, both to facilitate tillage, and to combat "finger-and-toe," now almost unknown to the farm. Except for lime, he relies entirely on "turnips, straw and cake" for his manuring, and the crops, though heavy, suggest quantity rather more than quality. The latter might be added, perhaps, by the use of some phosphatic dressing with the root crops.

The wheat fields, the one "Red Standard," and the other "Little Joss," promised good yields, and a comparison of the results on this land would have been of interest, but at the time of writing both have not been threshed. The mangolds, too, were evidence of a spirit of inquiry in the tenant, for they were a reputed cross between "Tankard" and "Long Red," and grew later in the year into some beautiful roots.

Practically all the live-stock is home bred. The cattle are extraordinarily good dual purpose Shorthorns with a slight tendency to favour the butcher rather than the dairy. Mr. Fox likes to cross Coates cattle on Lincoln Reds, the former for quality and the latter for constitution. All young stock on this farm has to be kept in, owing to the risk from blackleg—or this is, at all events, the tenant's theory. It has one advantage, for by keeping them in even the heifers can be got to rear more than one calf—three between each two. By caking the calves as soon as they will eat, and all the time, he gets prime baby beef at eighteen months or even earlier. The dual purpose is borne carefully in mind in the management of the cows. After their second calf those heifers which are inclined to beef are sold fat whilst still able to fetch steer-beef price; they do not need a prolonged fattening time as they are always in fresh condition, and soon finish on cake and roots. The remainder, about one in five, prove good enough as milkers to be kept till coming down with their third calf, when they go at high prices to the suburban milk producers. It is an excellent and striking system of management.

Mr. Fox has a Lincoln Red bull of his own, and also keeps the bull provided by the Duke of Portland for the use of his tenants. This was a first rate animal, as well-bred as possible, with promise of getting milkers whilst showing also great flesh development. Mr. Fox is of the opinion that abortion does spread through the bull—a point which calls urgently for investigation now that the schemes of the Board of Agriculture for co-operative bull societies are becoming general.

The horses had been reduced by the demands of the Army, but a comparison of the young ones with the older ones showed the benefit which had accrued from the formation of a Shire Horse Club in the vicinity. These Clubs are fairly numerous in the district, and they owe much to the interest and fostering of the Duke of Portland, who gives 100*l.* to all horse societies founded on the great Welbeck estate.

The pigs on this holding were useful breeding stock. The sows were half-breds, but there was a nice Lincoln Curly boar, and a pedigree White, bred by Sir Gilbert Greenall.

Altogether an enterprise full of interest, which secured a well-merited success.

Second honours in this class were awarded to Mr. Reuben Shelton, of the Grange Farm, at Ruddington, a place green in the memory of stock-breeders all over the world by its association with the name of the late Mr. Philo Mills. The Grange Farm lies about three miles due south of Trent Bridge, Nottingham, at the entrance to Ruddington village on the west side of the Nottingham-Loughborough road. The house and buildings lie by the roadside, and all the arable fields open from a hard road. It is a typical suburban farm, where things are brought to a high pitch of productivity by large purchases of manure, cake and artificials. It differs from the generality of such farms, however, in that the tenant does not set out to market much bulky produce, for no crops such as potatoes, hay nor straw are sold off. A four-course system of cropping is followed—first year roots, the greater part of them mangolds; then barley; then seeds and winter beans, and lastly wheat, or part wheat and the remainder oats and barley. The area under the respective crops this year was:—

26	acres	roots
28	"	barley
16	"	seeds
10	"	winter beans
24	"	wheat and oats

The soil is a nice medium sandy loam, and the main object of the management is the production of milk. The mangolds were a tremendous crop, the rows drilled close—22½ inches—and the plants set out close in the rows—12 inches. The manuring is also tremendous, for the crop gets 30 tons farm-yard manure, 3 cwt. basic slag, and is top dressed with nitrate of soda. The plant was astonishingly regular, due no doubt to the fact that Mr. Shelton, junior, works with his men, the land was almost perfectly clean, and in the first week of July the roots were already well developed. The swedes and cabbage were just as good, and the whole lying together in one field formed a wonderful root-break. The barley without seeds was a heavy crop, but where clover seeds were coming it was thin. The seed-ley, notwithstanding the season, had already been cut for hay, and was carrying a second growth heavier, possibly, than many people would have got in this year from their first cut; it appeared to be uniformly thick all over, but the tenant had been to the trouble of sowing up all thin places with trifolium. His custom of alternating the seed land with beans appeared to be well justified, as he gets a heavy crop once in eight years rather than a poor one every four years. The beans were not high, but they were thick, and well corned, though none too clean. The wheat was a good average crop, but the oats were very heavy, with a large crop of straw, as

might be expected from the manuring. Unfortunately they were going down rather badly.

The grass land was very well grazed, particularly when the heavy caking of the cows on it is considered. This is largely contrived by bountiful dressings with lime and road scrapings, and by occasionally laying a pasture field in for hay, but the obviously beneficial effects of an application of basic slag on a riverside meadow created the impression that a phosphatic dressing now and then might be advantageous. Some grass on black soil had responded less to the slag, but if the experience of fen-farmers may be taken as a guide, superphosphate might be more likely to succeed.

The live stock comprised mainly a magnificent herd of dairy Shorthorns with about forty cows in-milk, some long pedigrees and winners at various shows. Mr. Shelton uses home-bred bulls as a rule, but is careful to avoid in-breeding, and some breeders might think that a more uniform type would be secured in the herd without any loss of constitution if he were a little less particular on this score. He keeps careful milk records for all his cows. As regards the rest of his cattle, his practice of buying young Irish cows to feed in the place of expensive stores is decidedly good.

The horses are young Shires, heavy yet active, the type that is usually found on the roads, for Mr. Shelton has no use for the aged horse that has spent his best years on the roads for other men.

It is of interest to note, at the present time, that in spite of his proximity to Nottingham (unless, indeed, it is because of it) Mr. Shelton has no labour troubles. He is ably assisted in the management of his holding by his son.

Third prize went to Mr. William Peel, of Darfoulds Farm, Worksop. The holding is situated at the north-west corner of the district known as "the Dukeries," being just beyond the boundaries of Welbeck Park, two miles west of Worksop, and lying roughly at the intersection of lines joining Chesterfield and East Retford, from west to east, and Mansfield and Doncaster, from south to north. It is within a few hundred yards of the boundary between Nottinghamshire and Yorkshire, on the edge of the great South Yorkshire coal field. Pit shafts and mining villages lie round it on three sides in every direction, and the farm itself is the property of the Shireoaks Colliery Company.

The house and garden lie very pleasantly above the road, and the buildings adjoining in the rear are exceptionally good, and very well equipped for economical feeding. Mr. Peel has his own stones and is thereby enabled to do his own grinding. About two-thirds of the land is a limestone soil, and on this a

six-year rotation is followed, turnips and barley being succeeded by another white straw crop (barley or oats), then seeds left down for two years, and lastly wheat. The rest of the arable is too strong for turnips, and on this a four-course has been practised, summer fallows being followed by wheat, then seeds, and lastly oats. Mr. Peel thinks that this land will do better out of cultivation, and as the turn for seeds comes round, they are left down to form permanent pasture. None of these new leys have been down long enough yet to get fairly established, but they seemed to be rather more promising than the old pasture. The tenant does not hesitate to depart from the rotation sometimes and to crop according to circumstances, and farming up to the times, Mr. Peel had this year some oats which were the third white straw crop. The wheat was a very heavy crop, and all the straw crops were good. There were plenty of weeds in the arable, including a good many docks, but these were apparently imported with the manure, considerable quantities of which are carted in from the pit-head, as sent up from the pony stables below. This manure is drawn directly on to the land, and if Mr. Peel will accept a suggestion it would be that he should keep it, draw over it, and let it heat for six months before applying it, as in this way many of the weed seeds should lose their germinating power.

The cattle are mostly Lincoln Reds of nice quality. Mr. Peel has given up registering them, which seems a great pity, for not only should the market value of registered stock be higher than that of unregistered, but surely the first essential in the improvement of our breeds of live-stock is to have records on which to base the selection of sires and dams. The sheep are very good. Like so many men in this part of the country, Mr. Peel is a believer in the good qualities of the Suffolk ewe, and she is beyond question a good and a prolific mother. Mr. Peel crosses his Suffolk ewes with a Lincoln tup, and breeds a high-class type of lamb. A good many pigs are fed, but these are brought in, no breeding stock being kept.

This class, the small arable farm class, received more entries than any other in the competition, and the Judges remarked upon the keenness of the competition in it. They very highly commended Town End Farm, Bolsover, in the occupation of Mr. William Hunt. The holding lies at the eastern end of this once-picturesque village, which is chiefly famous now-a-days through its great colliery. It is a small farm, thoroughly well done, the object of the management being the production of corn and meat. The tenant resorts to heavy manuring with artificials, 8 cwt. of fish, blood or bone manure supplementing 15 tons of farmyard manure for turnips, whilst the same quantity of dung, together with 10 cwt. salt and 10 cwt.

"Mangold Manure," is applied to the mangold crop. Barley following wheat in a six-course rotation (seeds down for two years) receives a dressing of potash, and the grass-land is regularly dressed with superphosphate, bone-meal and slag. This is all of it skilful and progressive management, but it is doubtful if the tenant realises the cost of his rich farmyard manure, and the rations of his dairy and fattening stock (12 lb. of cake and corn per day) cannot in any circumstances pay. Having regard to the excellence of the markets surrounding him, the Judges expressed the opinion that more attention might be paid, with profit, to the production of milk and market garden produce on this holding.

GRASS FARMS.

CLASS IV.—400 acres or over.

Reaching the class for grass farms, the scene shifts southwards from arable Nottinghamshire, with evidence of the production of wealth in its industrial development above and below ground continually before the traveller, to Leicestershire, with its purer atmosphere, its great expanse of wonderful grass-land, and the associated traditions of sport suggesting the enjoyment of wealth rather than its creation. First prize in the class for large grazing or dairying farms was awarded to Mr. William Thomas Hayr, for Tur Langton Manor. The farm lies two miles from Kibworth Station, and is about seven miles north of Market Harborough, and twelve south-east of Leicester. It extends to 700 acres, the whole of which is grass, the charming old manor house and the adjacent buildings being very pleasantly placed on the outskirts of Tur Langton village. It is almost an ideal pasture farm, only a few fields lying rather out of the way being put up for hay, every other year. The land may roughly be divided into two classes. The first of these is so good that only bad management could make it rank and weedy, for it would always be productive. But Mr. Hayr's management is such that weeds are suppressed, and the land carries a sward that is never coarse. It was, indeed, wonderfully level, and full of a great variety of good grasses. Cocksfoot, a grass most excellent so long as it is not allowed to master its fellows, was hardly even to be seen in its aggressive stage, and weeds, if they existed, were thoroughly dominated by useful herbage. These results are achieved by very skilful grazing chiefly by cattle, sheep being run in such limited numbers as to get what they want without robbing the cattle, and a few horses following up to bite off what is left. The manuring, too, is excellent. Nitrogen is supplied by the clovers and by such caking as the cattle may require (excessive caking is a

fertile source of weeds); slag supplies the phosphates, which are apt to be deficient in good pasture land, whilst the lime in the slag makes available the potash which such soils contain in abundance.

The second class of pasture requires the greater skill in management to keep out weeds and to make it productive, and there is every evidence that Mr. Hayr's management does both. Smaller cattle and more sheep are grazed on these fields, more cake is used, and all weeds are snubbed back in the usual way.

As regards the live-stock on this farm, Mr. Hayr breeds nothing except a few sheep, everything else being bought in. He has the usual liking for age on the horned stock required for this class of land, but it is interesting to note that the exigencies of the market in this year had caused him to graze younger ones than usual, and these certainly seem to have done well. Upwards of 450 cattle are grazed, including Aberdeen-Angus, Blue-Greys, Herefords, Devons, and a large number of Lincoln Reds and useful Shorthorns. By July a large number had been sold, the Herefords going off first, but the pick of the cattle seen on the occasion of a visit early in July were the Lincoln Reds, which could hardly have been surpassed anywhere for quality and condition. Any stock not ready for the butcher by the end of the grazing season is sold if good forward stores are selling well; otherwise it is the custom to take straw-yard keeping in Norfolk or Lincolnshire for wintering them. Here they will get up to 7 lb. of mixed linseed and cotton cake per day, with a small payment per head for labour, and they come back in good forward condition about May 1 to be finished on the grass.

The sheep stock comprises a flock of about 200 Lincoln ewes, half of which are crossed with a Hampshire tup. Besides their lambs Mr. Hayr buys about 160 shearling wethers. All the sheep are wintered on the land. The lambs get their own living and are ready to sell as soon as sheared in June. The ewes receive a few old beans, crushed oats, bran, and a few dried grains from Christmas time.

There is a small, but famous, stud of Shire horses. The stock this year included 8 mares, 2 colts, 1 yearling filly and 7 foals bred by Mr. Hayr.

After what has been said about the management on this holding it is almost superfluous to add that such matters as gates, fences, and ditches are all in admirable order, and it may be noted that Mr. Hayr follows the practice of hand pulling for the eradication of thistles. Considering its efficacy it is surprising that this method is not more general. A large portion of the underground stem comes away with pulling, which otherwise is left in the ground to sprout again.

On the occasion of the visit for the purposes of this report, Mr. Hayr had already left for the Argentine, to judge at an important Agricultural Show. The farm buildings were almost entirely monopolised by horses sent back from France for a rest. In his absence the management of this interesting enterprise devolved upon Mrs. Hayr, who not only conducted the business of the farm, but found time, with the assistance of her daughters, to supervise the exercise of the convalescent horses, whose appearance bore eloquent testimony to her skill as a horse-master and to a patriotic desire to do the best for her country.

The second prize in the class for large grass farms was awarded to Messrs. H. C. & J. Holm, of The Grange, Carlton Curlicu. This holding lies about three miles north-west of the farm just described, being nearer to Leicester by that distance. Although mainly a grazing farm, about one quarter of it is arable land. The whole of it is strong soil, and the farm is one which might easily get unproductive without the brains, energy and business aptitude of the management. With the exception of the corn crops and of the wheat straw the whole produce of the farm is cashed in the form of pedigree horses, pedigree cattle, milk and sheep, which, though not pedigree, are chosen for their special suitability to the class of farming. The grass-land is well grazed and in good condition. Its fertility is maintained by caking stock on it, and the portion set aside for hay receives also an occasional dressing of farm-yard manure. Nearly all the stock on the place is home-bred. Messrs. Holm have been particularly successful with their Shire horses, and the fine show of cups, together with the animals on the farm, testify to their skill in this direction. They started with sound mares bought at a moderate figure, and, mating these with the best and most suitable sires they could command, they have graded the stud up till they now own brood-mares of the highest class. In the early days of the stud no price was high enough to tempt them to part with the best females, but now that the stud is established all except an occasional filly of special promise are sold at the proper time. The colts often go as foals, and the mares are sold in-foal generally at three or four years of age, having served their purpose by that time in helping to reduce the cost of cultivating the heavy arable land on this farm whilst being broken in to work.

The cattle are registered Lincoln Reds and the herd has been bred up on the principle that has been so successful with the horses, with the addition of careful milk recording. In the result, the stock from this herd are sought after not only by breeders of world-wide repute, but, that which is even more

useful from the national point of view, the commercial value of the stock for the dual purpose of beef and milk production is such that the demands of tenant farmers create a market for every young bull that Messrs. Holm think good enough to rear. In this way the cattle are yielding a double profit, first through the large yield of milk sold off the farm, and second through their bull calves reared on the cows which do not come up to their owners' high requirement of milk production, and which, when they have served this purpose, are finished off as excellent beef.

As regards sheep no pedigree flock is kept, but good quality north country she-hogs, such as Mashams or a similar type, are bought in, and put to a Hampshire tup for three seasons before being sold off fat. The lambs are wintered, and sold off through the summer.

The arable land is cropped on a six-course system, roots (principally mangolds) and beans during the first year; oats after mangolds, and oats or wheat after beans, during the second year; wheat sown down with small seeds in the third year, the seeds being followed by wheat in the fifth year, and then oats after wheat. The crops in 1915 were heavy and the land quite workably clean. It is strong tenacious stuff, always requiring three horses and sometimes four for the plough, but this extra cost is compensated for by the management of the young horses to which reference has already been made. The manuring is good, no special or patent manures being bought, but the requirements of the land are met by the application of what is most suitable at the lowest price per unit. It is quite time that farmers generally should follow this practice, and that manure merchants should give up attempting the impossible task of compounding manures suitable for all soils and all occasions.

The buildings on this holding are serviceable enough, but they cannot be described as skilfully planned with reference to each other. It is to be regretted that at the present time Messrs. Holm are restricted in their desire to push this holding to its utmost limit of production, by the fact that the farm is in the market for sale, along with the rest of the estate of which it forms a part.

To Mr. Tom Marriott, of Hall Farm, Edmondthorpe, Oakham, was awarded the third prize in this class. This farm lies about six miles due north of Oakham, about twelve miles due south of Grantham, being some five miles west of the Great North road, and about eight miles east of Melton Mowbray. The house and buildings lie on the slope of a hill commanding magnificent views of High Leicestershire. These main buildings lie near the main stretch of plough-land, which

divides the grass-land very conveniently. There is an excellent water supply delivered to the farm by a hydraulic ram, giving an unlimited supply of cold water for the milk cooler, which is often a great difficulty on dairying farms. The cow-sheds are all open to the air instead of having windows, and Mr. Marriott extends the open air system to his other cattle, which run out on the grass all through the winter, getting cake and straw in conveniently placed yards.

The grass-land lies mainly in two blocks, the one on the top of the hill and the other at the bottom of it. That on the top was poor land which is being enormously improved by the skill and hard work of the tenant. All this land is strong, and attention to drainage is the first essential, but neglect of the ditches had caused the out-falls to get completely stopped, and the effects were still visible in some of the fields. The tenant is, however, effecting a great improvement in them by careful attention to hedges, ditches, and outfalls, in conjunction with liberal dressings of basic slag backed up with plenty of cake. One field of poor grass had been broken up for wheat, which was a partial failure, and then laid down again. With basic slag this has now produced a wonderful bit of pasture, full of clover, and much better after five years than the unbroken grass-land lying round it. Indeed, it suggested reflection that much of this poor land would become more productive under a system of alternate husbandry. The meadow land on this part of the farm was distinctly late, and perhaps a little quick acting nitrogenous manure applied in the spring would have stimulated an earlier growth. On the lower side of the farm the grass-land was very good; it was perhaps getting a little rank in places, and it is conceivable that an application of lime would be beneficial, but all the grass on the farm was beautifully grazed, and it is a fact that the land in this district appeared as a whole to be much better grazed than the pastures of the West Midlands visited last year, with less weeds and weed grasses (sorrel, dock, Yorkshire fog, bent, &c.), amongst them.

Mr. Marriott keeps a herd of from twenty to thirty milking heifers, his practice being to buy good young store heifers, bull them on and then make them earn him a profit by milking them for London for two years, afterwards selling them out when down with the third calf, and thus realising a handsome capital appreciation. For this process it has not paid him to use a good bull, because all the calves are sold in the open market, and buyers, not knowing anything of the breeding, are unwilling to pay a price which will cover the cost of a good bull service. This system is about to give place to a much better one, for as a good many bullocks are bought at the

present time, to feed, the tenant has now decided to double the heifer herd and make half of them raise two calves each, so as to give him home bred stores, and thus it becomes desirable for him to have a high-class sire. During his five years' occupation of the farm he has doubled its stock-carrying capacity.

Whilst the grass is the main part of this holding the plough land would be a credit to any arable farm. As already remarked it lies very conveniently both for the central buildings and for the two sets of outlying buildings. It is also well arranged for cultivation as it is very little obstructed by hedges, and the long stretches of land are admirably adapted for the use of steam tackle. Mr. Marriott follows the four-course rotation—roots, barley or oats, seeds, beans or peas, wheat. This year all the crops were exceedingly good.

Hunter breeding is quite a feature on this farm, and also hunter making, Mr. Marriott being very ably assisted in the latter by his daughter and son. It is sometimes said that farmers should not allow hunting to take them from their business, but here it certainly pays, and Mr. Marriott maintains that the intercourse with other people resulting from it, and the consequent interchange of ideas, is profitable to any man.

CLASS V.

In the middle class for dairy or grass farms, in which there were only two entries, first prize was awarded to the executors of the late Mr. F. J. Stanhope, of Claybrooke, Lutterworth, a farm lying on Watling Street, twelve miles south-west of Leicester, eight miles east of Nuneaton, and about nine miles north of Rugby. The house and buildings adjoin the road and are both very well constructed and well planned. The main feature is a magnificent range of lofty cow-houses in which nothing leading to the economising of labour has been forgotten. The only thing for criticism is the arrangement of the cows in a double row, heads to the walls, without feeding passages. The head to head arrangement, with central feeding passage, would generally be preferred. There is a milking machine, the use of which had been abandoned after a long and thorough trial, and Mr. Stanhope reverted to hand milking, each cowman cheerfully milking a number of cows which would astonish most milkers. At the time of the Judges' visit the machine was again in use, and it would be of interest to know the causes which led to its abandonment in the first place, and to its subsequent re-instatement. The ventilation, air space, and general sanitation leave nothing to be desired, and though the depth of the standing is rather greater than is usually recommended no unpleasant consequences result, as the cows are kept clean in winter.

The cow stock comprises nearly 100 cows in milk. Most of them are bought in the north of England and are kept for about three years, during which time they earn a profit through their milk, and they are then sold whilst still valuable. Taken as a whole they are a wonderful lot, though lacking the fixed type which can be imparted only by the breeder. The herd consists practically of dual purpose non-pedigree shorthorns and a few pedigree Dutch. The tenants keep a Hereford bull, and they have a contract for the sale of all calves born at 45s. each, when two days old. It is a system that pays the management because no home-bred stock is kept, and the cross-bred calves are more saleable, but it is to be regretted that the qualities of some of these grand dairy cows are not transmitted, by careful mating, to their offspring for the maintenance of high-class dairy stock in the country. Nevertheless it is a practice much in advance of that of many milk-selling cow-keepers, who regard the calf only as a necessary evil. Any mongrel bull is good enough for them when selling the calves at five days, but loud are their complaints when compelled by an order, such as that which came into force this year, to rear their own calves to an age of five months! Mr. Stanhope might, however, use a bull which, whilst still getting him good beef steers, would also get heifers likely to grow into good dairy stock, at present all too scarce in the country generally.

Owing to the small amount of plough-land it is not found possible to adhere rigidly to a rotation, but the usual practice is to take mangolds, followed by oats and wheat, which are occasionally followed by seeds. The cropping for this year included 12 acres of wheat, 15 acres of oats, 2 acres of fodder crops, 3 acres maize, and 18 acres of roots of which 10 were mangolds. The mangolds get 30 loads of dung and about 8 cwt. of artificial. They were even and regular. The green crops are the principal object of the management, to keep up a succession of food for the cows. The maize is taken first, and then the turnips keep the cows going till the mangolds are ready. The corn crops were heavy, but unfortunately they looked like going down rather badly. Mr. Stanhope follows the excellent practice of always mowing the same fields. They get dung and bone-meal in alternate years, bone-meal having proved itself a better manure than basic slag on this land.

The second prize was awarded to Mr. Herbert Sutton, of Snarestone, Atherstone, whose farm lies six miles south of Ashby-de-la-Zouch, twelve miles north of Nuneaton, ten miles east of Tamworth, and sixteen miles west of Leicester. The house and buildings lie at a little distance from the road and the latter are no more than fairly convenient, but they have been added to, and improved as much as possible by the tenant,

who with great ingenuity has also installed the electric light, which greatly facilitates attending on the stock during the long winter evenings. Mr. Sutton's taste for machinery is further evinced by the installation of a milking machine, and he stated that he had found it entirely satisfactory.

The grass-land is intersected by the Ashby-de-la-Zouch Canal, and the farm is thus connected with the whole of the Midland canal system, but, as in most other places, no use is made of this fact for the transport of produce to and from the farm. It must be admitted, however regretfully, that for most places the day of the canal is past, and that the slowness of water transport combined with the fact that few canal companies are also common carriers, gives to the railway an overwhelming advantage.

It is noticeable that basic slag acted very differently by the canal side than higher up, and that lime and potash gave much better results. This must be very unusual, but the young cattle and the flock of Shropshire ewes bore out the appearance of the herbage by their condition. This is an example of the fact which has been so often noted all over the country, that basic slag is apt to be uncertain in its action. Away from the canal the cow pasture, which had been recently slagged, was a treat to see, and all the grass-land was well grazed.

The live stock included some fifty cows, and these and the young stock were all of fair quality, but the bull might have been better. Mr. Sutton has had trouble with abortion, and is afraid of using a better bull about which he might know nothing, for fear of re-introducing infection through him.

The cows are milked with a milking machine, and Mr. Sutton's experience is all in favour of it. No trouble has been occasioned with the cows, and the saving on labour is considerable. With the general scarcity of labour, and particularly of milkers, there is no doubt but that the use of these machines will spread in all the dairy districts, unless indeed the attempt to induce women to turn their attention to dairying should prove to be successful beyond the duration of the war. Perhaps it is due to the use of the machine that no milk records are kept. This is a point which the manufacturers would do well to consider. The milk in summer time is sold to a contractor, who supplies Messrs. Cadbury with milk for the manufacture of milk chocolate on six days of the week, and on the Sunday it is sent to London. In the winter months the whole supply goes to London. The feeding of the cows presents no unusual features, but it may be noted that the tenant follows the good practice of changing the pasturage day and night when the cows are out.

Horse breeding is a feature of the farm and Mr. Sutton had a splendid crop of foals. He has about twelve mares, four of them being registered. He finds it worth while to keep a young stallion of his own breeding to try his mares before sending them to a good horse. Before following this practice he found he was only wasting his stud fees. Only the best stallions procurable are used, even on the non-pedigree mares.

The sheep are Shropshires and some of the ewes are put to a Suffolk tup. The Shropshire lambs as well as the Suffolk-Shropshire cross-breds would have been a credit to any man. Though only just weaned they were holding their own on recently slagg'd grass without any cake.

The plough land is farmed on a four-course rotation, roots, oats, clover ("pen-fallowed"), and then wheat, with an occasional piece of barley. The plant of mangolds was very fine and there was a good crop of white Dutch wheat.

CLASS VI.

In the class for small grass farms first prize was awarded to Mr. Phillip Walker, for Parkfield Farm, Shipley, near Ilkeston. This farm is situated about eight miles north-west of Nottingham and the same distance north-east of Derby. It is in the colliery district, Shipley itself being a well-known mine, and the situation is an admirable one for milk production. Mr. Walker takes the fullest advantage of this, and possibly few farms of its size produce more milk, for there is a regular stock of about thirty cows, and the daily yield of milk is from sixty to sixty-five gallons. Except for ten acres of mangolds, grown year after year, all the farm is under grass. It is evidently naturally productive, and full of growth due to heavy cake feeding and heavy dressings of lime. Where coarse places appear in the sward Mr. Walker feeds wet brewers' grains on them—a practice which is certainly unusual but which proved itself entirely successful.

The great feature of the farm is the wonderful lot of dairy cows. All of these are evidently deep milkers, and all are thorough dual purpose animals. The best are deep enough, show constitution enough, and are thick-fleshed enough to be classed as Scotch shorthorns. A black-brindled cow, good enough to be a fortune to any small man, and an ornament to many herds, looked common among the wonderful specimens grazing with her in the field. The pity of it is that Mr. Walker has not taken the trouble to register his cattle. Quite a sufficiency of crosses with pedigree bulls—bought in Birmingham—have been used to secure entry into Coates' Herd Book. This neglect must certainly be costly to the owner, and is

further, of national importance, for a ready sale is obtained for his young bulls, and they are scattered far and wide. Owing to the failure to register them, many of the purchasers cannot know where to send their neighbours to purchase similar sires.

Mr. Walker is a born judge of stock, for the pig stock and horses on the farm are only second to the cows. He is a firm believer in grazing his pig stock. It is his boast that pigs are to be found in every field, and the condition of his land emphatically gives the lie to those who say that pigs spoil good pasture.

The homestead buildings, &c., are exceedingly well kept, and the Judges remarked that the management in every detail was a very great credit to the tenant.

The second prize farm, that of Mr. William Clay, Birdholm Farm, Chesterfield, lies in the same district, being about twenty miles north of Mr. Walker's farm, and about two miles south of Chesterfield, at the higher end of the Rother Valley. It is a holding which presents some interesting features and which gives rise to some serious reflections. It is the holding already referred to in the introductory part of this Report where an area formerly representing a coal mine, now worked out, has come back to agriculture. There were several old spoil-heaps on the farm now grassed down, on which the tenant was successful in maintaining a sward. In other respects the conditions of agriculture resemble those on Mr. Walker's farm, but the enterprise has been developed in a very different way, buying-in being practised in the place of breeding, and the sale of stock replacing the sale of milk as the principal object. The old pasture is only of moderate quality, but it has been well treated with farmyard manure, salt and basic slag, and for the second time (see page 230) the wonderful effect was seen of ploughing up and relaying poor pasture. In this case a semi-circular piece of land had been recently broken up, and wherever the plough had gone the sward was extraordinarily good. The high land pasture was short, but it must have been very sweet as the young stock, yearling heifers and lambs, were doing very well on it. By the river good results had been obtained with slag, but Mr. Clay has obtained no results from this fertilizer on the upland pastures. On these salt has proved much more efficacious, and it is possible that it may act beneficially by releasing potash.

As regards live-stock, Mr. Clay relies on buying-in. Heifers rear one calf, and those showing good udders with their second calf, are sold off to the urban cow-keepers. A lot of true blue-grey heifers, bought in Scotland, were finishing in July on a wonderful meadow land aftermath, and their quality shows Mr. Clay's judgment in purchasing, whilst their condition was a

testimony to the fertility of the soil and his management of grass-land.

The horses on this small farm are particularly good; there are three registered brood mares which do the work of the farm, and the two-year-olds, yearlings, and foals which Mr. Clay had to show were of very high class. There is a small ewe flock, and cross-bred lambs are bought in the autumn.

The arable was clean and in good order. It is farmed on a four-course rotation with roots after wheat, and oats after seeds; occasionally two white straw crops are taken, or seeds may be left down two years. The feature of the crops this year was a wonderful piece of swedes, quite the best seen, and it may be interesting to give Mr. Clay's management of the crop. A dressing of 3 to 1 tons of lime per acre was given in the previous autumn, 20 tons of farmyard manure were applied before the last ploughing, and 1 cwt. sulphate of ammonia before drilling. After singling, 1 cwt. of nitrate of soda was applied.

The thought that occurs is that in the great majority of cases this farm would be run for milk production, having regard to the situation, and to the success of the winner of the first prize in this class under economic conditions which closely resemble these. Reading this report the same reflection will arise in connection with other holdings, notably those in the large grass farm class, where systems of management differing widely from each other are practised upon holdings having many points of resemblance both as regards locality, proximity to markets and railway, and other conditions. The position seems to indicate a tendency to cultivate a taste in some particular direction, to follow the practice learnt during the farmer's apprenticeship, or to be guided by some principle no more trustworthy than these, rather than to study the business conditions in the particular locality which will give the greatest return on capital invested. Farmers are taught the technical side of their business: in a lesser degree they are taught the sciences upon which the successful raising of crops and stock depends, or they can avail themselves of the knowledge of others in these matters. But nowhere nor at any time have they been taught to regard the market, considered with reference to the capabilities of their own particular holding, as the only guide to the proper style of management to be pursued. If the manufacturer should follow a line of production pleasing to himself, but unpopular with the public for whom he was catering, his empty order book would pull him up short very speedily, and would indicate the need for a return to a sounder policy. But in agriculture there is always a market, at a price, for every kind of produce, and although the

farmer may not be producing what his public most needs, and what his holding could be developed most profitably to produce, it will never be brought home to him so sharply as it is to those engaged in other forms of industry, so long as the general level of agricultural prices is sufficiently high to leave him a living. At the same time he is at the mercy of any adverse movement in prices and the community as a whole is a loser by the fact that his enterprise is less productive than it could be. In fact, the same general conclusion is reached this year as in previous years, namely that the maximum production in this country will never be realised until it is recognised that high technical skill in the management of land and stock is insufficient by itself, and that until it is directed by a knowledge of the economic forces which control every kind of human enterprise, the position of the industry as a whole will be unsatisfactory.

Once again the writer desires to record his indebtedness to Mr. K. J. J. Mackenzie, Reader in Agriculture in the University of Cambridge, for his very valuable co-operation in the production of this report.

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MISCELLANEOUS IMPLEMENTS EXHIBITED AT NOTTINGHAM, 1915.

OWING to the war the number of new implements entered for the Society's Silver Medals was less than usual, being only 19 as against an average of 51 for the five previous years. Of the 19 entries one, a potato planter, entered by Messrs. Alex. Jack & Sons, was withdrawn, and two motor ploughs entered by Messrs. John Fowler & Co. and Martin's Cultivator Co. were ineligible for silver medals by reason of the Society's Rule 74, which is as follows:—"No Silver Medals will be awarded to, nor can any entry as 'New Implements' be accepted of, Machines of any class for which Competitive Trials have been announced by the Society as about to take place."

It was held that the competitive trials which had been announced were only postponed (in consequence of the war), not abandoned.

The remaining 16 entries included four that were deemed worthy of silver medals, viz.:—

Oil Ploughing Engine by Walsh & Clark, of Guiseley.

Oil Engine by Blackstone & Co., of Stamford.

Side Delivery Rake, Tedder and Swath Turner by Bamfords, of Uttoxeter.

Tedder by Bamfords, Uttoxeter.

The two engines were remarkable novelties.

Stand 254, No. 2960. *Oil Ploughing Engine* by Messrs. Walsh & Clark, Guiseley, Leeds. This engine was undoubtedly the feature of the show.

It is usual for genuinely new implements to make their first appearance in public in a somewhat crude form, and exhibiting many manifest points for improvement, but not so in this case: here was the product of what must have been a vast amount of thought and experiment burst upon the public as a complete surprise, and yet in the most finished style of the standard steam ploughing engines. Built on similar lines to

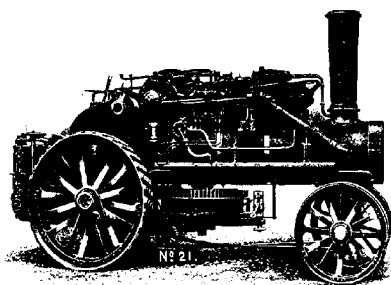


FIG. 1.—The "Victoria" Oil Traction Engine.

these, it is well calculated at a distance to be mistaken for one, so similar is the sound of the exhaust and so perfect the flexibility of its movements.

The engine, which is of the two cycle valveless type, using crude oil, is mounted on the top of a locomotive boiler-shaped body, which serves as a reservoir for compressed air and also contains the fuel tanks and the radiator. There are two working cylinders of 10 inch diameter and 13 inch stroke, and in tandem with these two other cylinders for scavenging and maintaining a supply of compressed air in the reservoir.

The fuel is delivered by a pump direct into the combustion chamber. For starting from cold a lamp is used, but afterwards the heat of combustion maintains the combustion chamber at a sufficient temperature for the ignition of the charge.

The storage of compressed air is large, and is utilized for

reversing by means of a lever operating a patented gear, which is positive in action and also enables the engine to be stopped under load and restarted, even, if necessary, without disconnecting the friction clutch.

The engine is stated to give 90 B.H.P. as a maximum for 1 hour on test and a regular working output of 70-75 B.H.P.

The makers claim an economy of fuel cost of 25 per cent. over steam and 500 per cent. less water consumption, and that as the engine carries sufficient fuel and water for 12 working days it is capable of working in localities which are not practicable for a steam engine. This saving of the trouble and expense of carrying coal and water is the point which will most appeal to agriculturists generally.

Stand 291, No. 3899. *Oil Engine* by Messrs. Blackstone & Co., Stamford.

The entry was made for a 7 B.H.P. engine, but the one actually produced to the Judges was a 12 B.H.P. engine of the same design entered as No. 3906. The exchange being necessitated by the war was held to be in order and allowed.

The novelty in this engine lay in the fact that it could be started from cold without the aid of any lamp for the preliminary heating of the hot bulb or combustion chamber although using a heavy refined petroleum oil of about 0.876 specific gravity.

This is rendered possible by the method of injecting the fuel in the form of an exceedingly fine spray by the aid of compressed air, the mixture being ignited by a low tension electric spark. The spraying nozzle is ingenious, simple and very easily cleaned. The system demands the addition of an air compressing pump and a reservoir for the compressed air, but this extra complication is further utilised for making the engine a self starter. There is not space in this notice to go into the principles and details of this engine, but the reader will find them fully explained in an article which appeared in the *Engineer* newspaper of April 23, 1915, a reprint of which can be obtained from Messrs. Blackstone & Co. The absence of a lamp for starting up, with its risk, cost and loss of time, and the fact that the engine starts immediately on pulling a lever will appeal to all.

Stand 274, No. 3397, Messrs. Bamfords, Leighton Iron Works, Uttoxeter. *New Combined Side Rake, Swath Turner, Tedder and Windrower*. Price, 18l.

The idea of combining side raking and swath turning in the same implement is not new, *cf.* Messrs. Blackstone's machine for the like purposes first shown in 1911.

In this machine extreme simplicity and lightness with a low selling price have been achieved, together with efficiency

in work, but at the cost of some adaptability as will be seen later.

The improvement consists in bridging the rake bars in their central portion, *i.e.*, in the portion of the rake to be omitted when it is to be used as a swath turner, and having loose make up pieces of rake easily inserted and fixed by a single bolt when used for side raking. The arching keeps the bars out of the way of the swath when turning. Further improvements consist in an improved sweeping movement of the tines, a new spring stripper board and new type of gearing.

It will be noted that the portions used for swath turning are at a constant distance apart, hence a lack of adaptability which demands that for satisfactory work the machine should follow a mower cutting a certain width of swath.

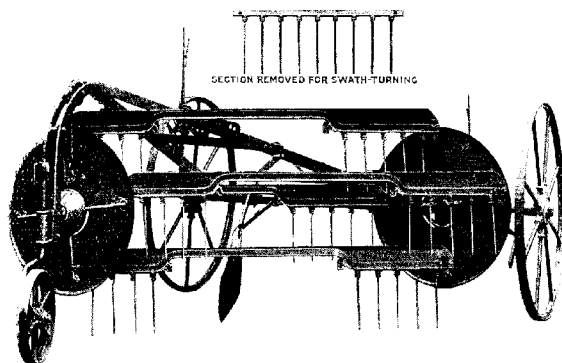


FIG. 2—Bamfords' Side Rake and Swath Turner.

Stand 274, No. 3399, Messrs. Bamfords, Uttoxeter. *New "Lion" Tedder*. This machine is not what is generally understood by a Tedder, there is no whirling and threshing of the hay, but a gentle forking of it up and leaving it in a thoroughly loose and open state. A better name would be "haymaker."

A live shaft carries at each end three arms symmetrically disposed at 120° apart, and by the side of each set of arms is an eccentric drum. The drums are driven in unison with the live shaft, and the amount of their eccentricity can be varied.

Attached to the end of each arm is a rocking lever which is pivoted in a bearing on the periphery of the adjacent drum, and to the other end of each lever is fixed one end of a rake. By these means a feathering pendulum action is imparted to

the rakes, and also a certain sweeping motion as they pass the ground.

During the lower portion of their revolution the tines of the rakes project towards the ground between stripper bars, which make it impossible for any of the hay to be carried round, and thus there is no blocking.

The rakes are made up of spring tines, each independently connected by a bolt, nut, and washer.

The live shaft has attached to each end a pinion driven by an internal gear mounted upon each wheel axle, and these gears in turn are driven by a ratchet and pawl.

Thus the outer wheel is always the driver when turning a corner, and there is no stopping of the action.

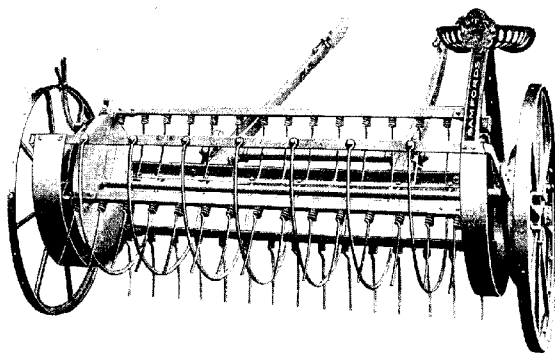


FIG. 3.—Bamford's New "Lion" Toller.

This method of driving, in addition to being very simple and direct, allows the live shaft to be placed very near the centre of the road wheels, so that it follows their motion very closely over ridge and furrow.

Two firms showed combined machines for sowing and manure distribution at the same time:—

Stand 83, No. 555, Walter Dunn & Co., 10, St. Margaret's Street, Canterbury. *Disc or Colter Corn and Fertiliser Drill*. Price 60*l*. This is an attempt to do at least three things at once. At the time of the Show it was anything but practical looking in design, but I understand that great alterations have since been made, and it is intended to enter it again next year in an improved form as a new implement.

It is interesting to record the programme set out for the machine as given in the descriptive pamphlet. "The ground, having been prepared in the usual way, is first broken

up by means of tines placed in front of shoes which form V-shaped trenches, into which the seed is dropped through feed tubes. The feed rolls above are so regulated as to deposit each seed at accurately gauged intervals. Into the seed hopper there is fed, from a second box carried on the frame, an equally regulated deposit of artificial manure, both seed and manure being sown together. Behind the seed feed tubes there is placed a second row of tines in such position as to cover the seed and manure with soil to the depth of one inch. Under dry and friable conditions of soil these tines may be supplemented by rollers, which break up the small clods and press the soil over the seed. At the rear of the chassis is a

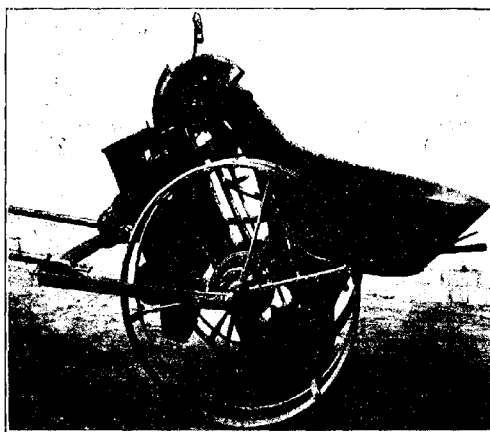


Fig. 4.—Single Row Planter and Manure Sower.

third box which deposits a regulated supply of lime (or other fertilising material suited to requirements) on top of the covering of soil, and this, for the time being, completes the first operation. When the plant has grown to a height of three or four inches the trench is filled in by the machine used only as a cultivator and, if desired, for sowing further fertilising material." It will be noticed that the principle of "tillering" is adopted.

Stand 163, No. 1741. John Wallace & Sons, Dennistoun. Glasgow. *Potato Planter*, Single Row, "Richmond" patent. with an artificial manure distributing attachment, 167.

There is nothing new in this machine except the combination.

It consists of the makers' "Richmond" planter together with a modification of the chain delivery "Westphalia" manure distributor.

Stand 99, No. 788. *Tillager*, invented by Edward Seeley, and manufactured by Murton & Turner, of Kenninghall, Norfolk, 25*l.* 7*s.* 8*d.* A composite machine consisting of a corn drill, modified to enable it to sow single grains and also of the special instruments for the process of assisted tillering, consisting of (1) a set of moulders, one attached to each seeding coulter to make a furrow in the bottom of which the coulter sows the seed, and to reserve the soil from the furrows on the intervening ridges for the tillering process; and of (2) two sets of forks by which the soil may in two operations be restored to the furrows upon the roots of the growing plants. Exhibited by the Rev. Edward Seeley, 10, Berkeley Road, Tunbridge Wells.

This exhibit consists of three attachments to be fixed to a standard cup drill for the purposes above stated.

They are very simple pieces and no doubt will do the work for which they are made. The interest, however, in this exhibit lay in the results as shown at the Nottingham Corporation Farm, at Stoke Bardolph, where five plots had been sown by Seeley's tillering process, one of them with $\frac{1}{4}$ bushel to the acre, and four with $\frac{1}{2}$ bushel to the acre; three other plots had been sown in the ordinary manner with two bushels to the acre of the same kinds of wheat for purposes of comparison.

The Judges visited these plots accompanied by Mr. Seeley.

It was evident that $\frac{1}{4}$ bushel to the acre was insufficient. There is too much light and air space left for the growth of weeds whilst the plant is young, and the crop suffers accordingly.

It will be interesting to see the resulting crops when harvested; but assuming that the same crop is obtained from $\frac{1}{2}$ bushel of seed by tillering as from 2 bushels by ordinary sowing, the practical question for the farmer is whether the value of the $1\frac{1}{2}$ bushels of seed saved will meet the cost of the two and sometimes three extra operations demanded by the tillering system exclusive of the weed difficulty, and whether suitable weather can be counted upon for these extra treatments to be feasible at the proper times.

Stand 147, No. 1451. Messrs. B. C. Tipper & Son, The Veterinary Chemical Works, Balsall Heath, Birmingham, showed a boot for the treatment of the feet of sheep, price 8*d.* The upper part is of canvas and the sole is dished and made of papier-maché.

Stand 175, No. 1964. Messrs. Trehella Brothers Pty, Ltd., 6, Alma Street, Soho, Birmingham, *Post Hole Digger*. This

is a rough adaptation of the ordinary screw boring tool. It works in spite of there being quite large pebbles in the soil and lifts them and the soil out of the hole. It is made in three sizes, 6 inches 12s. 6d., 9 inches 15s., and 12 inches 20s.

A small neat hole is all right where an iron post has to be run in with concrete, but unsuitable for wooden posts which have to be rammed.

Stand 181, No. 2030. Messrs. George Brown & Son, Victoria Iron Works, Leighton Buzzard. *Horse Hoe* fitted with patent stabiliser, 4l. 11s. 6d. The stabiliser consists of a steel disc, somewhat similar to those used in the disc plough, which can be set to counteract the tendency of the hoe to slip downhill when working on a hill-side.

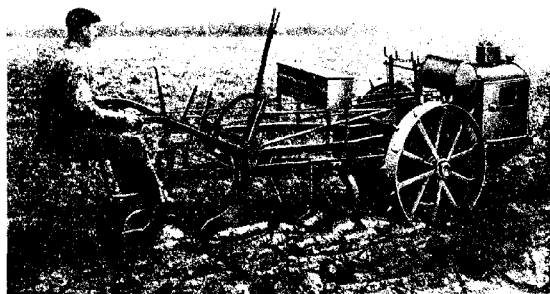


Fig. 5.—Fowler's Patent Double Furrow Motor Plough.

Three *Motor Ploughs* were shown, two of them being new implements, one by Messrs. John Fowler & Son, of Leeds, the other by Martin's Cultivator Co., of Stamford. The third was that of Wyles Motor Ploughs, 5, Carr Street, Manchester.

Fowler's Plough was said to be an improvement on the Wyles Plough, the patents of which are embodied in it, and is on very similar lines.

Martin's Plough was mounted on "creepers" instead of wheels, as in the other two. It was disappointing that we were not afforded an opportunity of seeing it at work, as the weather was certainly such as to have given it a very severe test.

We saw both Fowler's and the Wyles Plough at work in pouring rain, and upon land that had previously been broken up.

The trial was too severe to justify criticism, particularly as competitive trials are to be held by the Society when the war is over. It was suggested by the writer of the Reports on the Implements of the last two Shows that it was desirable that a seat should be provided for the driver. This was done on both the new ploughs, but it seems very doubtful whether the driver found in it much comfort or alleviation of his work. The task of the drivers of motor ploughs is a very arduous one indeed, owing largely to the amount of steering required as the result of the slipping of first one wheel and then the other. The very narrow wheelbase, too, adds the risk of capsizing to his many other cares. In these directions there is room for much improvement.

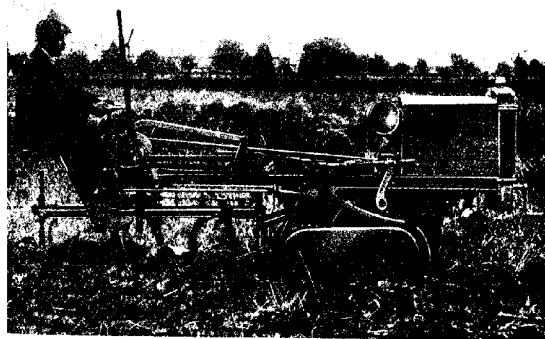


Fig. 6.—Martin's New Patent Motor Plough.

The exhibit of *Agricultural Tractors* with internal combustion engines was disappointing, seeing the number of American tractors that are already in the country, and the evident demand that is springing up for them.

The Daimler Company, Stand 236, had entered a *Collection of Motor Lorries and Tractors*, but the only tractor they were able to have on show was one of the very large type they are building for the Army Transport, and cannot, therefore, be considered as agricultural. They are, however, building a 40 H.P. tractor on the same lines for farm work, which will pull a four furrow plough on hard, heavy land.

Saunderson & Mills, Stand 239, showed a series of their *Tractors* of 10, 20, 30 and 50 B.H.P. of practically same design as last year. The 20 H.P. is probably the best suited to the average English farm, and fortunate possessors of this size spoke most highly of its efficiency.

The Ivel Agricultural Motors, Stand 241, showed their now well-known *Tractor*, and also one fitted with two speeds.

The only American machine of this type entered in the catalogue was shown by the Sandusky Tractor Co., of Cambridge Place, Paddington. It is fitted with a 4-cylinder engine, 5 inch bore by $6\frac{1}{2}$ stroke, and has three speeds forward and a reverse. Direct drive on lowest speed. The engine is placed fore and aft as in the Daimler. The price of 550*l.* puts it rather beyond most farmer's means, and it is perhaps more as a road tractor that it will find a market.

It was an attractive looking machine and fitted with a very elastic clutch.

In *Milking Machines* there does not appear to be much that is new to record. The "Armo" still remains the only machine free from rubber tubing. Vaccar, Ltd., showed their machine fitted with a newly designed and more accessible pulsator, which is an improvement.

On Stand 132 Messrs. William Cooper & Nephews, of sheep dip fame, showed an improved *Iron Disc Sharpening Machine* for the Stewart Horse and Sheep Clippers, which really does seem to place it within the power of the user to keep his blades sharp. The improvement consists of an automatic traversing holder or finger for moving the blades across the disc and ensuring the evenly distributed pressure so essential to the grinding of the blade truly flat and so difficult to attain by hand as hitherto. The price remains low as before.

The thanks of the Judges are due to the Stewards of Implements, the Hon. J. E. Cross and Mr. R. M. Greaves, for their excellent organisation in facilitating the work of judging, and to the Society's Consulting Engineer, Mr. F. S. Courtney, for his unflinching courtesy and advice.

J. BROUGHTON DUGDALE.

Wroxall Abbey,
Warwick.

REPORT OF THE STEWARD OF DAIRYING NOTTINGHAM SHOW, 1915.

L.—FARMERS' MILK COMPETITION.

OUT of the 103 entries for the Farmers' Milk Competition, which was instituted by the Sheriff of Nottingham, Mr. Councillor Small, the milks from 98 herds were sampled and analysed in the Nottingham City Health Department's laboratories, under the superintendence of Dr. Philip Boobyer and Mr. P. W. Watson.

Five competitors were ineligible as the milk was not supplied to Nottingham in accordance with the conditions governing the competition.

The samples were taken during the period of three weeks between the 4th and 25th June. In no case was a competitor aware when his milk would be sampled.

The regulations governing the points were as follows:—

- 4 points for 1 per cent. of fat.
- 2 points for 1 per cent. of solids other than fat.
- 15 points as a maximum for the cleanliness of the milk.
- Milk showing less than 3 per cent. of fat and 8.5 per cent. of solids other than fat, or not gaining ten points for cleanliness, will be disqualified.
- The disqualification of one sample of milk will debar the competitor from receiving a prize or certificate of merit.

During the whole of the sampling period drought prevailed throughout the district. For the first eight days the mean of the maximum temperature was 72.8° F., and that for the latter half of the period was 65.7° F., which is more than seven degrees below that of the earlier period.

During the first week the prevailing winds were West or South-West, and during the latter part of the time they were almost consistently North-East.

Much of the milk sent in had not been cooled, which omission very materially affected the points given for cleanliness, several milks being disqualified for bacterial content, as the high temperature of such milks would favour the growth of the "bacterial flora." But for this, nearly all of the competitors would have received certificates of merit.

The prize in Class 1, for competitors sending in thirty-one gallons of milk and over to the City of Nottingham daily, was won by—

SAMUEL NORTH, Trent Lane Farm Dairy, Sneinton.

TABLE I.—FARMERS' MILK COMPETITION
CLASS I.

Fat per cent.				Solid-matter, per cent.				Points			Remarks	
No.	Daily Delivery of Milk	Mon- ing.	Even- ing.	Average	Mon- ing.	Even- ing.	Average	Average Solid- matter, per cent. x 2	Clean- milk, maxi- mum 15	Total		
1	Galinas	320	4.30	3.85	992	9.16	9.39	13.40	18.75	15	49.15	Prize
2	38	330	4.70	3.90	888	9.60	9.19	16.00	18.58	15	48.88	Certificate
3	37½	330	4.30	3.75	844	9.56	9.245	15.40	18.40	15	48.50	Certificate
4	35	330	4.30	3.75	940	9.63	9.465	14.40	18.93	15	48.33	Certificate
5	50	360	4.50	3.75	929	9.90	9.78	15.60	19.38	13	47.98	Certificate
6	60	390	5.00	3.75	863	8.50	9.040	16.40	18.13	13	47.53	Certificate
7	100	390	4.20	3.90	945	9.29	9.300	15.20	18.33	14	47.83	Certificate
8	35	330	4.50	3.75	878	8.79	9.165	13.40	18.33	14	47.77	Certificate
9	42	310	4.80	3.80	954	9.24	9.085	14.40	18.17	14	47.17	Certificate
10	42½	350	4.20	3.85	902	8.84	9.05	15.40	17.70	14	47.10	Certificate
11	57½	370	4.70	3.85	902	9.24	9.085	13.40	18.17	14	47.10	Certificate
12	75	390	4.70	3.85	894	8.92	9.00	15.40	18.00	13	46.50	Certificate
13	115	390	4.10	3.65	894	8.64	9.05	15.40	17.80	13	46.20	Certificate
14	135	390	4.70	3.85	894	8.92	9.00	15.40	17.80	13	46.20	Certificate
15	145	390	4.70	3.85	894	8.92	9.00	15.40	17.80	13	46.20	Certificate
16	155	390	4.70	3.85	894	8.92	9.00	15.40	17.80	13	46.20	Certificate
17	165	390	4.70	3.85	894	8.92	9.00	15.40	17.80	13	46.20	Certificate
18	175	390	4.70	3.85	894	8.92	9.00	15.40	17.80	13	46.20	Certificate
19	185	390	4.70	3.85	894	8.92	9.00	15.40	17.80	13	46.20	Certificate
20	195	390	4.70	3.85	894	8.92	9.00	15.40	17.80	13	46.20	Certificate
21	205	390	4.70	3.85	894	8.92	9.00	15.40	17.80	13	46.20	Certificate
22	215	390	4.70	3.85	894	8.92	9.00	15.40	17.80	13	46.20	Certificate
23	225	390	4.70	3.85	894	8.92	9.00	15.40	17.80	13	46.20	Certificate
24	235	390	4.70	3.85	894	8.92	9.00	15.40	17.80	13	46.20	Certificate
25	245	390	4.70	3.85	894	8.92	9.00	15.40	17.80	13	46.20	Certificate
26	255	390	4.70	3.85	894	8.92	9.00	15.40	17.80	13	46.20	Certificate
27	265	390	4.70	3.85	894	8.92	9.00	15.40	17.80	13	46.20	Certificate
28	275	390	4.70	3.85	894	8.92	9.00	15.40	17.80	13	46.20	Certificate
29	285	390	4.70	3.85	894	8.92	9.00	15.40	17.80	13	46.20	Certificate
30	300	390	4.20	3.70	869	9.53	9.36	13.60	16.75	13	46.35	Certificate
31	310	390	4.55	3.45	847	9.25	9.39	13.50	16.50	13	46.39	Certificate
32	320	390	4.20	3.40	862	9.25	9.36	13.60	16.75	13	46.35	Certificate
33	330	390	4.50	3.30	891	9.00	9.10	13.90	16.75	13	46.35	Certificate
34	340	390	4.30	3.35	892	9.25	9.10	13.90	16.75	13	46.35	Certificate
35	350	390	4.30	3.35	892	9.25	9.10	13.90	16.75	13	46.35	Certificate

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No.	Daily Delivery of Milk	SOLIDS NOT-FAT, 3 PER CENT.				FAT PER CENT.			Points	Remarks
		Morning	Evening	Average	Morning	Evening	Average	Average Fat per cent. $\times 4$		
	Gallons								Clean- liness, maxi- mum 15	Total
37	50	290	295	3275	905	971	938	1370	13	4426
38	34	350	430	390	925	792	8585	1560	12	4477
39	65	270	300	3125	929	894	9115	1250	13	4473
40	65	270	300	3125	929	894	9115	1250	12	4473
41	37	280	415	345	900	914	922	1380	12	4434
42	38	270	500	385	931	821	886	1340	11	4412
43	62	260	300	325	945	897	920	1340	11	4398
44	62	260	300	325	945	897	920	1340	11	4398
45	40	370	500	435	891	907	929	1740	11	4398
46	45	370	500	435	891	907	929	1740	11	4398
47	34	410	430	420	871	862	865	1690	11	4343
48	48	345	520	4325	871	836	8535	1690	11	4343
49	26	370	490	385	924	916	920	1340	11	4343
50	42	320	450	385	924	916	920	1340	11	4343
51	47	320	450	385	924	916	920	1340	11	4343
52	42	320	450	385	924	916	920	1340	11	4343
53	50	320	450	385	924	916	920	1340	11	4343
54	50	320	450	385	924	916	920	1340	11	4343
55	40	320	450	385	924	916	920	1340	11	4343
56	40	320	450	385	924	916	920	1340	11	4343
57	40	320	450	385	924	916	920	1340	11	4343
58	35	330	420	375	900	890	895	1430	11	4343
59	35	330	420	375	900	890	895	1430	11	4343
60	40	330	420	375	900	890	895	1430	11	4343
61	40	330	420	375	900	890	895	1430	11	4343
62	40	330	420	375	900	890	895	1430	11	4343
63	40	330	420	375	900	890	895	1430	11	4343
64	40	330	420	375	900	890	895	1430	11	4343
65	40	330	420	375	900	890	895	1430	11	4343
66	40	330	420	375	900	890	895	1430	11	4343
67	40	330	420	375	900	890	895	1430	11	4343
68	40	330	420	375	900	890	895	1430	11	4343
69	40	330	420	375	900	890	895	1430	11	4343
70	40	330	420	375	900	890	895	1430	11	4343
71	40	330	420	375	900	890	895	1430	11	4343
72	40	330	420	375	900	890	895	1430	11	4343

(1) Morning sample, Fat below 3 per cent.
 (2) Evening sample, Fat below 3 per cent.
 (3) Morning sample, Solids-not-fat below 85 per cent.
 (4) Evening sample, Solids-not-fat below 85 per cent.
 (5) Excessive bacterial content.

TABLE I.—FARMERS' MILK COMPETITION—continued.
CLASS II.

No.	Daily Delivery of Milk	Fat per cent.		Solids-not-fat, per cent.		Points		Remarks
		Morning	Evening	Average	Morning	Evening	Average	
	Gallons							
73	420	5.40	5.95	5.67	9.04	9.30	9.17	50.83
74	480	5.40	5.95	5.67	9.04	9.30	9.17	48.55
75	330	4.20	3.75	3.97	9.27	10.02	9.64	48.20
76	330	4.20	3.75	3.97	9.27	10.02	9.64	48.20
77	230	5.60	5.85	5.72	9.38	9.57	9.47	48.05
78	27	3.20	3.85	3.52	8.92	8.75	8.83	47.77
79	27	4.00	3.95	3.97	8.95	8.95	8.95	47.77
80	230	3.90	3.95	3.92	8.95	8.95	8.95	47.77
81	315	4.30	3.95	4.12	8.74	8.90	8.82	47.77
82	27	5.00	4.10	4.55	8.92	8.94	8.93	47.77
83	330	5.40	5.95	5.67	9.04	9.30	9.17	47.77
84	30	5.40	5.95	5.67	9.04	9.30	9.17	47.77
85	330	4.50	3.90	4.20	9.10	9.40	9.25	47.77
86	330	4.40	4.35	4.37	9.15	9.15	9.15	47.77
87	230	4.40	4.35	4.37	9.15	9.15	9.15	47.77
88	374	4.40	4.35	4.37	9.15	9.15	9.15	47.77
89	27	4.30	3.90	4.10	9.10	9.10	9.10	47.77
90	27	4.30	3.90	4.10	9.10	9.10	9.10	47.77
91	27	4.30	3.90	4.10	9.10	9.10	9.10	47.77
92	10	4.50	3.85	4.17	9.15	9.15	9.15	47.77
93	17	4.50	3.85	4.17	9.15	9.15	9.15	47.77
94	28	4.40	3.90	4.15	9.15	9.15	9.15	47.77
95	28	4.40	3.90	4.15	9.15	9.15	9.15	47.77
96	24	4.30	3.85	4.07	9.15	9.15	9.15	47.77

(*) Morning sample. Fat below 3 per cent. (2) Evening sample. Fat below 3 per cent.
 (3) Morning sample. Solids-not-fat below 8.5 per cent. (4) Evening sample. Solids-not-fat below 8.5 per cent.
 (5) Morning sample. Solids-not-fat below 8.5 per cent. (6) Evening sample. Solids-not-fat below 8.5 per cent.

The prize in Class 2, for competitors sending in thirty gallons of milk and under to the City of Nottingham daily, was won by—

T. H. ARAM, Dunkirk House, Montpelier Road, Dunkirk.

Certificates of merit were awarded to the following:—

R. Pole Allsebrook, T. and J. Allsopp, W. N. Bissell, William Brewill, Wm. A. Buchanan, A. E. Chamberlain, A. H. Crawford, W. Septimus Gadd, Joseph B. Greaves, Walter Green, C. John Harwood, Henry Heath, Alfred Holland, Oswald Kirk, F. C. Moss, T. Benjamin Moss, Leonard Nation, Thos. Oliver, F. Peet, John P. Poole, John Bolton, William Paul Brett, Bycroft Bros., J. C. Fisher, Arthur Gillott, Edward James, J. W. North, John Robb, John Smith, W. Somes Staton, Henry Whitlam, W. Whitney.

The quality of the various milks is shown from the following average figures:—

No. of herds	Daily milk delivered	Average fat per cent.	Average solids-not-fat per cent.
98	4424 gallons	3.67	9.09

the averages of the morning and evening milk being as below—

	Fat per cent.	Solids-not-fat per cent.
Morning	3.09	9.11
Evening	4.25	9.07

Although the average of all the milks (3.67 per cent. fat and 9.09 per cent. solids-not-fat) agrees fairly closely with the average composition of milk, the individual samples in a large number of cases gave results varying so widely from the normal, as to make it impossible to regard them as representative of the daily supply of milk from a herd of dairy cattle. The differences in the fat percentages between the morning and evening milks may be, to some extent, accounted for by (a) the unequal intervals of time that elapsed between the two milkings in the period of 24 hours, (b) the fact that in many cases, as mentioned above, the milk had not been cooled, and (c) the employment of young and inexperienced milkers.

The collection and sampling of the milk, and the whole of the analytical and bacteriological work, a very big task, was undertaken by the Health Department of the Nottingham City Council, under the superintendence of Dr. Philip Boobbyer, who kindly supplied the particulars of the weather and the reasons for the undue bacterial proliferation in many of the milks, and to him and to Mr. P. W. Watson the thanks of the Society are specially due.

II.—MILK YIELD TRIALS.

The number of cattle entered for these competitions showed a considerable reduction over those entered last year at Shrewsbury, but, as there were few absentees at Nottingham,

the number of cattle tested amounted to 101, which figure has only been beaten twice since these trials were instituted, viz., at Norwich and Shrewsbury.

The scale of points governing both this and the Butter Test trials differed slightly from that of last year on the question of lactation, as it was felt that cattle were sometimes kept back from breeding in order to obtain high lactation points, thus tending to defeat the object for which these competitions are held.

The revised scale of points is as follows :—

One Point for every 1 lb. of milk.

One Point for every completed ten days since calving, deducting the first forty days. Maximum lactation points, 12, but subject to the following conditions :—

- (a) Cows served within 90 days after calving but not later, may obtain maximum points for lactation.
- (b) Cows which have calved 91 to 120 days and have been served within that time, but not later, can only obtain a maximum of 8 points for lactation.
- (c) Cows not served within 120 days after calving can only obtain a maximum of 5 points for lactation.
- (d) Cows which have calved 121 to 150 days and have been served within that time, but not later, can only obtain a maximum of 4 points for lactation.
- (e) Cows which have calved over 150 days whether served or not after that time, will not receive any points for lactation.

A Certificate giving the last date of calving and the last date of service and stating that the Cow has not broken her service since that date, signed by the owner of the Cow exhibited or his agent, must in every case be brought to the Steward of Dairying as soon as possible after the animal has arrived in the Showyard.

Four Points for every 1 per cent. of fat shown on the average of the percentages of fat found in the two milkings.

Cows whose milk shows less than 3 per cent. of fat reckoned on an average of the fat percentages found in the two milkings will be disqualified.

Fractions of lbs. of milk, percentage of fat, and incomplete periods of less than ten days, to be worked out in decimals, and added to the total points.

No Prize or Commendation will be awarded to cattle which do not obtain the following points :—

	Cows 5 years old and over	Cows and heifers under 5 years
Shorthorn, Lincolnshire Red Shorthorn, } South Devon, or British Holstein . }	63 points	57 points
Devon, Longhorn, Red Poll, Ayrshire, } Jersey, or Guernsey }	58 "	52 "
Kerry or Dexter }	48 "	42 "

In the case of cows obtaining the same number of points, the prize to be awarded to the cow which has been the longest time in milk.

The cattle were stripped on Wednesday evening, June 30, at 5 p.m., the milk of the next 24 hours being taken for these and the Butter Test Trials.

Table II. on pp. 253-5 gives the full results and the prize winners in their various classes.

Report of Steward of Dairying, Nottingham Show, 1915. 253

Exhibitor	Name of cow	Date of birth	Days of lactation	Date of last service	Total milk, 24 hours, lbs.	Avg. milk per day, lbs.	Feet milked, X 4	Total milk, lbs.	Awards
Class 80									
Earl of Derby, K.G.	Shorthorns	July 8, 1899	13	—	13 oz.	410	423.19	35.40	58.50
R. W. Hobbs & Sons	Millemarck 2nd	Sept. 17, 1907	37	—	63	275	52.37	11.90	74.37
Lord Lucas	Rose 43rd	Oct. 28, 1906	12	—	68	0	58.00	13.80	83.80
Lord Lucas	Princess Gift	Mar. 26, 1906	12	—	68	0	58.00	13.80	83.80
Lord Lucas	Daisy Queen	Apr. 5, 1907	8	—	69	4	58.00	13.80	83.80
Lord Lucas	Princess Gift	Nov. 17, 1906	36	—	69	10	58.00	13.80	83.80
Lord Lucas	Johnny Rose 10th	Oct. 24, 1906	11	—	69	10	58.00	13.80	83.80
Lord Lucas	Lucy Grey	May 12, 1907	17	—	69	10	58.00	13.80	83.80
Lord Lucas	Scott 4th 7th	Feb. 12, 1910	26	—	69	10	58.00	13.80	83.80
Lord Lucas	Newland Jersey 7th	June 5, 1906	26	—	69	10	58.00	13.80	83.80
Lord Lucas	Mary of Hazle 2nd	June 13, 1906	10	—	69	10	58.00	13.80	83.80
Lord Lucas	Thornhill Belle 10th	Jan. 1, 1904	10	—	69	10	58.00	13.80	83.80
Lord Lucas	Duchess of Cranford 3rd	Apr. 10, 1904	26	—	69	10	58.00	13.80	83.80
Lord Lucas	Darlington Cranford 24th	Oct. 26, 1908	26	—	69	10	58.00	13.80	83.80
Lord Lucas	Shark	Nov. 2, 1906	33	—	69	10	58.00	13.80	83.80
Lord Lucas	Helmut 1st	Sept. 4, 1911	68	—	69	10	58.00	13.80	83.80
Lord Lucas	Newland Rose 7th	Dec. 16, 1911	34	—	69	10	58.00	13.80	83.80
Lord Lucas	Redwax 1st	Aug. 22, 1911	39	—	69	10	58.00	13.80	83.80
Lord Lucas	Redwax 2nd	Sept. 12, 1911	42	—	69	10	58.00	13.80	83.80
Lord Lucas	Dorchester 1st	Sept. 10, 1911	42	—	69	10	58.00	13.80	83.80
Lord Lucas	Dorchester 2nd	Sept. 10, 1911	42	—	69	10	58.00	13.80	83.80
Lord Lucas	Barry 14th	Mar. 8, 1913	15	—	69	10	58.00	13.80	83.80
Lord Lucas	Barrington Constance	May 8, 1912	15	—	69	10	58.00	13.80	83.80
Lord Lucas	Irish Rose	Oct. 4, 1912	17	—	69	10	58.00	13.80	83.80
Class 114									
John Evans	Shorthorns	March, 1905	35	—	63	6	462	63.37	18.48
John Evans	Norton Grange Queen	Dec. 11, 1910	35	—	63	6	462	63.37	18.48
John Evans	Blackbridge 213 B	Oct. 28, 1906	36	—	63	6	462	63.37	18.48
John Evans	Barton Phil 2nd	Feb. 28, 1906	36	—	63	6	462	63.37	18.48
John Evans	Campan Lowland	Feb. 8, 1904	26	—	63	6	462	63.37	18.48
John Evans	Wyndford Daisy 2nd	Dec. 3, 1904	36	—	63	6	462	63.37	18.48
John Evans	Chapman	Apr. 19, 1915	73	—	63	6	462	63.37	18.48
John Evans	Orange	June 8, 1915	73	—	63	6	462	63.37	18.48

1 Estimated: Evening sample broken in transit.

TABLE II.—MILK-YIELD CLASSES AT NOTTINGHAM, 1915—continued.

No. in Challenge	Exhibitor	Name of cow	Date of birth	Date of last calf	No. of days in milk	Date of last service	Total milk yield in pounds	Points			Awards
								Aver- age per cent.	Lac- tion per cent.	Total	
<i>Class 119</i>											
946	R. B. M. Othrel	<i>South Devons</i>	July 28, 1910	Apr. 28	68	—	10, 52	3.70	52.12	14.80	260 86.52
948	R. B. M. Othrel	Watercress 2nd.	Oct. 3, 1909	May 3	59	—	54 11	3.82	54.97	15.28	190 72.05
949	Pag. & Whitley	Milkmaid	July 10, 1905	Apr. 22	70	—	54 8	3.25	54.97	13.96	500 70.45
950	W. & H. Whitley	Marquise Lucy 10th	Jan. 27, 1908	Apr. 19	73	—	41 13	4.07	41.97	18.68	330 63.85
<i>Class 124</i>											
968	Capt. C. W. Cottrell	<i>Longhorns</i>	Apr. 26, 1909	Apr. 21	71	June 9, 1915	38 8	4.30	38.59	17.20	310 58.65
970	F. A. N. Newdegate	Ardon Queens Queen 2nd.	June 27, 1908	Apr. 15	77	June 12, 1915	36 4	4.70	36.55	18.80	370 58.75
971	W. Hanson	Wyken Noreen	Apr. 26, 1910	June 20	11	—	46	6.407	46.37	16.53	NH 62.65
<i>Class 140</i>											
1020	Kenneth M. Clark	Ardon Lady Danya	May 23, 1910	May 16	45	—	68 8	3.10	68.50	12.49	350 81.50
1021	Kenneth M. Clark	Sudbourne Belinda	Jan. 3, 1908	Apr. 30	63	—	65 14	3.40	65.87	13.60	320 83.67
1024	The Earl of Lonsdale	Sudbourne Morris 3rd	Jan. 23, 1908	May 7	65	—	68 0	3.30	68.00	13.50	150 72.70
1025	The Earl of Lonsdale	Lowther Phoebe	Nov. 27, 1910	Mar. 24	89	—	37 10	3.45	37.02	13.80	590 57.92
<i>Class 154</i>											
1114	Alexander Cross	Knockdon London Lassie	Mar. 14, 1912	June 15	16	—	32 12	4.72	32.75	18.88	NH 51.65
1116	Alexander Cross	Meikle Kimory Perfection	May 4, 1910	May 13	49	—	35 0	3.45	35.00	13.80	90 49.70
1117	Le-Col. G. J. Ferguson	Ardene Brown Bess 3rd	April, 1907	May 3	59	—	35 12	2.97	35.15	11.88	190 46.55
1119	William Gibson	Auchendole Kate 2nd	Mar. 13, 1910	May 19	43	—	57 12	3.42	57.25	13.68	30 71.73
1120	William Gibson	Moorside Annetta 1st	Jan. 16, 10	June 12	19	—	43 0	3.02	43.00	14.48	NH 57.48
1121	William Kerr	Old Lady Sarah 1st	June, 1911	June 20	11	—	25 14	3.25	25.67	13.60	NH 42.67
<i>Class 161</i>											
1144	John Bromet	Routh Blossom	Sept. 3, 1909	May 15	47	—	62 0	3.02	62.00	12.03	70 74.78
1145	John Bromet	Sales Dorothy 1st	1909	Apr. 11	51	—	57 12	3.40	57.25	13.84	110 51.55
1146	John Bromet	Trodegar Donny 1st	1908	June 17	51	—	55 12	3.40	55.25	13.60	130 72.65
1147	John Bromet	Trodegar Donny 2nd	1908	June 17	14	—	59 0	3.50	59.00	14.00	NH 72.90
1148	Hugh Brown	Colton Symmetry	June 9	June 9	22	—	62 12	4.07	62.15	16.23	NH 76.03
1149	Hugh Brown	Colton Symmetry	Feb. 28, 1910	June 30	21	—	46 0	3.75	46.00	14.88	800 68.83
1150	Hugh Brown	Colton Symmetry	Nov. 1909	Feb. 20	131	—	46 0	3.75	46.00	14.88	800 68.83
1151	Mrs. Townsland	Stonfield Darling	Unknown	Apr. 27	65	June 7, 1915	54 0	2.97	54.00	11.48	250 66.48
1154	Sir Peter C. Walker	Lerock Alice	Unknown	Apr. 27	50	June 11, 1915	54 0	2.97	54.00	11.48	100 63.50
1157	F. R. & H. Willets	Chadwellen Darkie	Unknown	June 14	17	—	64 12	3.20	64.75	12.80	NH 77.55

Estimated. Dearer amount broken in transit.

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No. in Class	Exhibitor	Name of cow	Date of birth	Date of calving	No. of milk	Date of last service	Total milk, 24 hours, lbs.	Average test, 24 hours, lbs.	Milk, 100 lbs. test, lbs.	Produce, 100 lbs. test, lbs.	Remarks
Class 170											
1205	Mrs. Bradish-Williams	Evu Garrick	Feb. 23, 1907	1915	124	Apr. 30, 1915	16, 512	35.25	35.25	30.48	840
1206	Joseph Gerson	Pamela, 2nd	Jan. 26, 1909	Mar. 27	98	June 14, 1915	38 12	4.65	35.75	18.60	580
1207	Dr. H. Garner	Marcella, 2nd	Mar. 22	1915	70	June 7, 1915	Withdawn	—	—	—	—
1208	Miss Enderby	Favour's Fortune	May 8, 1908	Apr. 29	63	May 28, 1915	42 6	3.90	45.97	17.28	370
1209	Geo. Murray-Smith	White Fanny	June 1911	Mar. 19	104	June 8, 1915	37 14	6.47	27.87	25.88	640
1210	J. H. Smith-Barry	Laxton Lady	Dec. 6, 1906	Feb. 1	150	June 13, 1915	39 10	4.72	39.69	19.88	1130
1211	J. H. Smith-Barry	Marionette	Jan. 8, 1911	Mar. 28	95	June 13, 1915	36 10	4.52	38.63	17.28	550
1212	J. H. Smith-Barry	Nerine	Mar. 8, 1909	Apr. 14	98	—	47 0	4.60	47.00	18.40	390
1213	J. H. Smith-Barry	Autocrat	Apr. 28, 1908	Jan. 24	154	Apr. 27, 1915	43 5	5.57	43.25	22.38	1140
1214	Hon. Mrs. Tennant	Lockheart	Feb. 10, 1911	Feb. 18	133	Apr. 18, 1915	26 8	5.90	26.50	23.30	930
1215	Hon. Mrs. Tennant	Doctor's Mansion	Aug. 31, 1911	Jan. 8	175	May 2, 1915	33 0	5.80	33.00	22.70	1230
1216	Mrs. Geo. Thursley	Indispensable 2nd	Feb. 14, 1907	Mar. 23	100	May 14, 1915	31 10	4.47	31.92	17.48	650
1217	Lady Wrentham	Excerpt	Aug. 25, 1910	Mar. 28	92	June 24, 1915	34 4	4.87	34.25	19.48	640
1218	A. Miller-Ballett	Indispensable 2nd	Jan. 11, 1912	Mar. 31	92	June 30, 1915	26 8	4.75	26.50	19.00	520
1219	W. M. Jackson	Mar. Queen 4th	May 20, 1912	May 1	61	—	34 0	5.30	34.00	21.20	210
1220	A. W. Bailey Hawkins	Stranger's Rose of Gold	Nov. 26, 1910	June 16	15	—	40 8	5.60	40.50	20.00	N11
1221	J. F. Remnant, M.P.	Domington Duke	Nov. 14, 1909	Apr. 27	75	—	38 0	3.82	38.00	15.28	230
1222	J. F. Remnant, M.P.	Tracred	Jan. 14, 1909	May 20	84	—	53 8	4.05	55.50	16.20	N11
1223	Mrs. R. Co. Butteridge	Highland Lady Jub	Aug. 31, 1911	Mar. 20	94	June 2, 1915	39 4	4.10	39.25	19.40	840
1224	A. W. Bailey Hawkins	Rowanberry 8th	Feb. 23, 1912	May 10	62	June 17, 1915	44 14	4.37	44.07	16.68	520
1225	Mrs. W. Howard Palmer	Hoyes Loyal 6th	Apr. 28, 1911	May 27	35	—	44 8	5.80	44.50	15.29	N11
Class 182											
1357	Capt. J. L. Ames	Walton Fernie	1908	Apr. 24	63	June 21, 1915	45 4	5.35	45.25	15.80	280
1358	Edmund Royle, M.P.	Caythorpe Calfy 2nd	Apr. 2, 1909	Mar. 28	95	June 14, 1915	38 8	4.90	18.50	18.40	550
Class 183											
1347	H.M. The King	Darke	1909	May 23	39	June 16, 1915	34 8	4.90	34.50	19.60	N11
1348	H.M. The King	Dudman	1912	May 9	38	June 16, 1915	40 12	5.47	40.75	13.88	130
1349	H.M. The King	Barrow Bee 2nd	Aug. 28, 1910	May 20	135	May 21, 1915	38 13	5.20	36.97	14.80	330
1350	H. Martin Gibbs	Barrow Buttercup 2nd	June 4, 1906	Apr. 9	71	—	28 0	2.65	28.00	10.60	310
1351	Mrs. Leatham	Marnalide	June 1911	May 9	53	—	40 2	4.02	40.12	12.48	410
1352	Mrs. Leatham	Marnalide	June 1911	May 9	53	—	40 2	4.02	40.12	12.48	410

* Estimated: Evening sample broken in transit.

TABLE IV.—RESULTS OF BUTTER TESTS AT NOTTINGHAM, 1915—continued.

CLASS 187A.—COWS IN MILK, EXCEEDING 900 LB. LIVE WEIGHT.

No. in Catalogue	Exhibitor	Name of cow	Breed	Live weight	Date of birth	Date of last calf	No. of days in milk	Colour and quality of milk		Quality	No. of pounds for period of lactation	Total No. of pounds	Awards	CURRING TABLE			
								Butter	Butterfat					Time	European award	Refined	Manufactured	Butter	European award
83	J. Evans	Barton Family	Black Red	13 0 7	Mar. 1906	1917	20	11 0 1/2	1/2	Good	3200	3200	1st Prize	7 41	3 24	37	66
84	J. Evans	Barton Family	Black Red	13 0 7	Oct. 28, '08	Mar. 28, '09	20	12 8 3/4	1/2	Good	3225	3225	H. C.	7 41	3 24	37	66
87	J. Evans	Barton Family	Black Red	11 2 14	Feb. 1, '04	June 6, '05	25	18 8 1/2	1/2	Good	3250	3250	H. C.	7 41	3 24	37	66
92	J. H. Chick	Wentford Baby 3 1/2	Devon	10 2 0	May 1, '11	April 25, '12	60	22 8 1/2	1/2	Good	1625	1625	H. C.	7 41	3 24	37	66
923	J. H. Chick	Wentford Baby 3 1/2	Devon	14 0 6	Dec. 8, '09	April 25, '12	60	22 8 1/2	1/2	Good	1625	1625	H. C.	7 41	3 24	37	66
945	R. R. Nethred	Coxfield	S. Devon	13 0 14	July 28, '09	April 28, '10	56	22 8 1/2	1/2	Good	3225	3225	H. C.	7 41	3 24	37	66
946	R. R. Nethred	Coxfield	S. Devon	13 0 14	July 28, '09	April 28, '10	56	22 8 1/2	1/2	Good	3225	3225	H. C.	7 41	3 24	37	66
949	Fague & Whitty	Richmond Fairy	S. Devon	12 3 0	May 9, '09	April 16, '10	74	24 8 1/2	1/2	Good	3200	3200	H. C.	7 41	3 24	37	66
950	W. & H. Whitty	Messingto Farm	S. Devon	13 3 11	Jan. 27, '09	April 20, '11	74	24 8 1/2	1/2	Good	3200	3200	H. C.	7 41	3 24	37	66
975	W. & H. Whitty	Messingto Farm	S. Devon	13 3 11	Jan. 27, '09	April 20, '11	74	24 8 1/2	1/2	Good	3200	3200	H. C.	7 41	3 24	37	66
1020	K. M. Clark	Red Poll	Red Poll	11 9 7	May 28, '06	May 16, '06	46	68 8 2 1/2	1/2	Good	3250	3250	H. C.	7 41	3 24	37	66
1022	K. M. Clark	Red Poll	Red Poll	13 2 14	Oct. 8, '06	April 20, '07	62	67 14 2 1/2	1/2	Good	3250	3250	H. C.	7 41	3 24	37	66
1146	J. Brown	Red Poll	Red Poll	11 1 14	1900	April 11, '01	81	57 12 1 1/2	1/2	Good	3250	3250	H. C.	7 41	3 24	37	66
1152	D. & J. Pool	Red Poll	Red Poll	11 2 14	1900	June 17, '01	81	57 12 1 1/2	1/2	Good	3250	3250	H. C.	7 41	3 24	37	66
1206	J. H. Smith-Barry	Jersey	Jersey	8 0 7	Mar. 13, '06	April 22, '07	70	45 14 2 1/2	1/2	Good	3250	3250	H. C.	7 41	3 24	37	66
1221	J. H. Smith-Barry	Jersey	Jersey	8 0 7	Mar. 13, '06	April 22, '07	70	45 14 2 1/2	1/2	Good	3250	3250	H. C.	7 41	3 24	37	66
1224	Hon. Mrs. Penman	Lady Tipton	Jersey	8 1 7	April 22, '06	April 9, '07	53	41 5 2 1/2	1/2	Good	4250	4250	H. C.	7 41	3 24	37	66
1227	C. Thelmsen	Arden	Jersey	9 0 0	Aug. 28, '06	Mar. 11, '07	112	40 18 2 1/2	1/2	Good	3250	3250	H. C.	7 41	3 24	37	66
1263	A. W. Bullock	Red Poll	Red Poll	8 1 14	Nov. 28, '06	April 17, '07	75	41 14 2 1/2	1/2	Good	3250	3250	H. C.	7 41	3 24	37	66
1269	J. H. Penman	Domington Lane	Jersey	8 3 14	Nov. 14, '06	April 17, '07	75	41 14 2 1/2	1/2	Good	3250	3250	H. C.	7 41	3 24	37	66
1300	New Hampshire	Edford Lane	Jersey	9 0 0	Aug. 31, '06	Mar. 29, '07	91	41 14 2 1/2	1/2	Good	3250	3250	H. C.	7 41	3 24	37	66

A "Butter of Butter" represents the number of lbs. of milk required to make 1 lb. of butter. The H. of milk and butter is based on the average of the two.

TABLE IV.—RESULTS OF BUTTER TESTS AT NOTTINGHAM, 1915—continued.
CLASS 187 B.—COWS IN-MILK NOT EXCEEDING 900 LB. LIVE WEIGHT.

No. in Catalogue	Exhibitor	Name of cow	Breed	Live weight	Date of birth	Date of last service	No. of days in milk	Butter yield in 14 hours	Colour and quality of butter		No. of pounds for No. of pounds for	Award	CHURNING TABLE			
									Ratio	Quality			Time	Temperature of cream (F.)	Time	Temperature of milk (F.)
1205	Mrs. Bradfield	Erica Garlick	Jersey	7 0 16	Feb. 25 '07	Feb. 27 '14	104	19.5	Good	Good	30.25	3rd Prize	12 12	56	31	64
1206	J. Carson	Patricia 2nd	Jersey	7 3 21	Jan. 26 '00	Mar. 25 '08	104	20.1	Good	Good	32.25	Cert. of Merit	12 11	1 0	46	64
1209	Mrs. Enderby	Peacock's Portia	Jersey	7 2 0	May 8 '06	Apr. 29 '08	104	20.1	Good	Good	28.25	.....	1 27	1 17	50	64
1215	G. Murray Smith	Phyllis	Jersey	7 1 21	Jan. 5 '11	June 3 '15	104	20.1	Good	Good	24.25	.....	12 38	1 3	28	64
1216	G. Murray Smith	Lillian Lyle	Jersey	7 0 0	Dec. 5 '00	Feb. 1 '09	104	20.1	Good	Good	32.75	.....	12 35	1 2	50	64
1217	J. H. Smith-Barry	Cyrus	Jersey	7 1 21	Jan. 8 '11	Mar. 27 '15	104	20.1	Good	Good	30.65	2nd Prize	12 31	1 2	50	64
1222	J. H. Smith-Barry	Norrie	Jersey	7 3 21	Apr. 28 '06	June 26 '14	104	20.1	Good	Good	33.00	Cert. of Merit	12 31	1 2	50	64
1223	Hon. Mrs. Thompson	Buttercup	Jersey	7 1 14	Feb. 16 '11	Feb. 15 '12	104	20.1	Good	Good	33.00	Cert. of Merit	12 31	1 2	50	64
1225	Hon. Mrs. Thomas	Lockwood	Jersey	6 2 14	Aug. 21 '11	Jan. 8 '14	104	20.1	Good	Good	29.00	Cert. of Merit	12 31	1 2	50	64
1229	Mr. W. W. Weston	North Vincent	Jersey	7 1 14	Aug. 22 '06	Mar. 19 '14	104	20.1	Good	Good	29.00	Cert. of Merit	12 31	1 2	50	64
1231	Lady Wernher	Rosamund	Jersey	6 3 14	Sept. 26 '08	May 26 '10	104	20.1	Good	Good	29.00	Cert. of Merit	12 31	1 2	50	64
1235	A. Mitchell-Hall	Indispendable 2nd	Jersey	7 0 7	Jan. 11 '12	Mar. 31 '15	104	20.1	Good	Good	29.00	Cert. of Merit	12 31	1 2	50	64
1242	Lady Wernher	May Queen 4th	Jersey	6 2 21	May 20 '12	May 1 '15	104	20.1	Good	Good	31.00	Cert. of Merit	12 31	1 2	50	64
1249	Mrs. Vofell	Hockey Hall	Wendy	7 2 21	Sept. 25 '12	Apr. 26 '15	104	20.1	Good	Good	31.00	Cert. of Merit	12 31	1 2	50	64
1253	Mrs. Leckham	Marmaleade	Devon	6 2 14	1911	May 9 '13	104	20.1	Good	Good	31.75	.....	12 31	1 2	50	64

* The "Butter Ratio" represents the number of lb. of milk required to make 1 lb. of butter. Ten lb. of milk are reckoned as equal to an imperial gallon.

The revised points for lactation, as given under Section II, on page 252, applied equally to the Butter Test Classes, but in all other respects the conditions and scale of points were the same as at Shrewsbury.

The cattle were weighed on Tuesday evening, June 29, and divided into their respective classes—Class A for cows exceeding 900 lb. live weight, containing forty-nine animals; Class B for cows 900 lb. and under, numbering fifteen.

Table IV., on pp. 257-9, gives the full particulars of the trials, and the prizes and awards given in each class.

Table V. gives the average results obtained with the various breeds tested, and confirms the remarks made above as to the excellence of the animals in the Trials.

TABLE V.—Average Results obtained in the Butter Test Trials.

No. of cows competing	Breed	Live weight	Days in milk	Milk		Butter		Butter Ratio	Points
				Lb.	oz.	Lb.	oz.		
24	Shorthorn	1347	38	47	9½	1	11¼	27.95	27.25
3	Lincoln. Red do.	1446	51	59	7½	2	8¾	23.39	41.75
3	Deron	1325	55	37	14	1	9	24.02	26.50
5	South Devon	1375	68	51	8½	1	15¾	26.54	34.55
1	Longhorn	1463	11	46	6	2	2½	21.66	31.25
2	Red Poll	1382	54	68	3	2	3½	30.41	37.27
3	Holstein	1311	75	50	14¾	1	13¼	27.19	37.42
18	Jersey	850	95	37	7¾	1	15¾	18.80	37.37
4	Guernsey	957	61	36	13¼	1	12¾	20.91	30.19
1	Dexter	742	53	40	2	1	5½	29.51	23.05

In the report of this trial at Bristol in 1913, a table showing the butter ratio figures for the six shows previous to the Bristol show, and also the same figures for Bristol was given. The figures at Nottingham being unique, this Table is again inserted with the addition of the Shrewsbury and Nottingham results.

TABLE VI.

Breeds	Six Shows		Bristol		Shrewsbury		Nottingham	
	Butter Ratio		Butter Ratio		Butter Ratio		Butter Ratio	
	Lb.		Lb.		Lb.		Lb.	
Shorthorn	32.15		32.91		30.64		27.95	
Lincoln. Red Shorthorn	29.92		30.47		29.07		23.39	
Devon	32.69		27.02		25.16		24.02	
South Devon	31.37		25.66		29.43		26.54	
Longhorn	24.00		23.46		33.53		21.66	
Red Poll	35.84		—		36.56		30.41	
Holstein	—		35.15		—		27.19	
Jersey	20.57		21.01		21.07		18.80	
Guernsey	21.66		22.15		25.01		20.91	
Dexter	—		—		24.58		29.51	

Where all the breeds have done so well it may be thought invidious to mention any one in particular, but the fine performance of the Lincolnshire Red Shorthorns and the excellent ratio of the Jerseys are both worthy of special notice.

IV.—THE ANALYSIS OF MILK.

An interesting exhibit to illustrate the component parts of milk was kindly prepared and lent to the Society by Dr. Goodwin, the Principal of the Midland Agricultural and Dairy College at Kingston.

It consisted of seven jars, the first containing one gallon of milk, and the remaining six the various constituents that go to make up a gallon of milk :—(a) Water, (b) Fat, (c) Casein, (d) Milk Sugar, (e) Albumin, and (f) Ash.

The exhibit was educative as well as interesting, as it illustrated very clearly the relative proportions in which the several component parts of milk were present. With this, the following table was sent, setting out the average composition of milk of good quality.

TABLE VII.—AVERAGE COMPOSITION OF MILK.

	Per cent.	
Water	87.75	
Fat	3.50	
Casein	3.20	
Sugar	4.40	Solids-not-fat
Albumin	0.40	
Ash	0.75	
	100.00	

A second table was also exhibited, which showed how, taking the composition of average good quality milk, the several constituents would be affected by the addition to the milk of water in certain definite proportions.

TABLE VIII.

	Genuine Milk.	Milk with added Water.				
		5%	10%	15%	20%	25%
		Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Water	87.75	88.37	88.98	89.59	90.20	90.82
Fat	3.50	3.32	3.15	2.97	2.80	2.62
Solids-not-Fat	8.75	8.31	7.87	7.44	7.00	6.56
(Containing Ash)	(9.75)	(9.71)	(9.68)	(9.65)	(9.62)	(9.60)

It must be pointed out, however, that while the above table is based on the average composition of milk of good quality—

and of which 3·5 per cent. of fat may be taken as representative—this is above what is known as the "Government Standard," this latter being only 3 per cent. (not 3·5 per cent.) of fat and 8·5 per cent. (not 8·75 per cent.) of solids-not-fat.

It is on this lower standard, and essentially on the fact that the Law requires milk to contain at least 8·5 per cent. of solids-not-fat, that prosecutions have to be based. The following table shows how, taking the legal definition of genuine milk, the determining factor (the solids-not-fat) would be affected by the addition of water.

TABLE IX.

	Milk with added Water.					
	Legal Milk.	5%	10%	15%	20%	25%
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Solids-not-fat ...	8·5	8·07	7·65	7·22	6·80	6·37

The proportion of added water may be found by applying the following formula :—

$$\text{Percentage of "added water"} = 100 - \frac{\text{solids-not-fat (in sample)} \times 100}{8·5}$$

EXPERIMENTS IN THE DAIRY.

As in previous years, an experiment to demonstrate the value of the milks of the twelve dairy breeds of cattle in the showyard for making butter was undertaken, two gallons of the morning and two gallons of the evening milk being used in each case.

The results were similar to those which had been obtained before, and showed that with the exception of the Channel Island and Loughorn breeds, surplus milk on a farm can be used more profitably in other ways than in making butter.

With the present big demand for cheese, and the suitability of small cheeses for sending abroad at the present time, the following cheeses—all of which can be quickly and easily manufactured—were made in the dairy at Nottingham :—

V.—SMALL HOLDERS' CHEESES NOS. 1 AND 2.

These cheeses, which are fully described in the leaflet No. 231 published by the Board of Agriculture and Fisheries, were made during the first four days of the Show week. They require the minimum of utensils, and in the case of No. 2 cheese take as little as two and a-half gallons of milk, while they can be readily sold at a price to bring back to the farmer 9d. to 10d. per gallon for the milk.

They are ready for consumption in from three to four weeks.

VI.—PORT DU SALUT.

This cheese, which takes about five gallons of milk, can be made in the same mould as the Caerphilly and the Small Holders' cheese No. 1. The process of manufacture takes three days, after which the cheese should be turned every day for a fortnight. It is fit to eat in from three to four weeks, but improves in flavour if kept from six to eight weeks. The recipe for making this cheese, together with a description of the requisite utensils is given in the leaflet on Soft and other Cheeses published by the Society. If well made, the cheese should return 1s. per gallon for the milk.

VII.—COULOMMIER.

These cheeses were made during the whole week of the Show, and were readily disposed of. Very few utensils are required, and they bring back to the farmer, if the cheese is well made, from 1s. 3d. to 1s. 6d. per gallon for the milk used. The recipe for this cheese is given in the Society's leaflet.

VIII.—DOUBLE CREAM AND GERVAIS CHEESES.

As in previous years considerable quantities of these cheeses were made in the dairy throughout the week, and as a proof of their popularity, they were sold each day as fast as they could be moulded and packed.

IX.—CHEESE MIXTURE.

Of recent years cheese mixtures have been very much to the fore. These mixtures are of good flavour, and being packed in small jars, are much in demand for outdoor luncheons, &c.

In texture they are not unlike a well-set double cream cheese, being a trifle harder, but they have not the consistency of ordinary cheese.

They are mostly made from cheese of the Cheddar or Cheshire type. This is ground very fine, and then mixed with olive oil or butter, to which a little preservative and colouring matter has been added.

Several experimental mixtures were potted in the dairy throughout the week, and, being made of good cheese, were found to be excellent.

After taking the cost of the materials used, there is a good margin of profit, and as these mixtures require no plant and can be made by any one, they are recommended as a good way of using up cheese which may be getting too dry.

The recipe for making mixtures of this description is given in the Society's leaflet.

X.—CAERPHILLY CHEESE.

An experiment—similar to that at Shrewsbury in 1914—was carried out in the dairy at Nottingham, the object being to ascertain the differences in the quality and weights of cheeses produced from the milks of certain breeds of cattle, and also to find out what effect the addition of a certain quantity of separated milk to the whole milk would have on the resulting cheeses.

The breeds selected were the Shorthorn, Holstein, and Jersey, and the cheeses made were as follows :—

One in each case from six gallons of whole milk, one in each case from four gallons of whole and two gallons of separated milk.

The milks were carefully weighed out for each cheese, and the process of manufacture was carried out on identically similar conditions, although atmospheric changes affected in one case the quality of the cheese.

On the day that the cheese, made from the whole and separated Jersey milks, was being treated the weather was very warm and continuous thunderstorms prevailed, causing too much acidity to develop in the milk, which resulted in a greater loss of weight, and also prejudiced the quality of the cheese.

The weight of curd produced from each lot of milk was taken before "salting," and the cheeses were subsequently weighed and examined six weeks and twelve weeks respectively after the close of the Show.

The Tables on the opposite page give the quantity of milk used, the weight of the curd and cheese, and other particulars connected with the experiment.

From these Tables it will be seen that in every case the cheeses made from whole milk were of better quality than those made from whole and separated milks, while the difference in the weights of the whole milk cheeses were considerable, the richer milks producing the heavier cheeses.

All the cheeses were at their best when eight weeks old, as, owing to a spell of very warm weather setting in during the second six weeks, the cheeses became over ripe.

XI.—SCALDED CREAM.

Experiments to test the suitability of milk of the following breeds for scalding, and the treatment necessary to obtain the best results, were carried out throughout the week.

TABLE N.

No	Breed	Weight of milk		Weight of cheese time of making	Weight of cheese 6 weeks after Show	Loss in weight	Remarks.
		Whole	Separated				
1	Shorthorn	Gall.	Gall.	Lb. oz.	Lb. oz.	Lb. oz.	Excellent quality, not ripe.
2	Holstein	6	—	8 15 $\frac{1}{2}$	6 10 $\frac{1}{2}$	2 15 $\frac{1}{2}$	Very good quality, not ripe.
3	Jersey	6	—	8 6 $\frac{1}{2}$	5 4 $\frac{1}{2}$	2 11 $\frac{1}{2}$	Excellent quality, not ripe.
4	Shorthorn	6	—	9 8	6 11 $\frac{1}{2}$	2 12 $\frac{1}{2}$	Excellent quality, not ripe.
5	Holstein	1	2	8 7	5 0	3 7	Fair, rather bitter taste.
6	Jersey	4	2	7 11	4 3 $\frac{1}{2}$	3 7 $\frac{1}{2}$	Poor, bitter taste.
				8 5 $\frac{1}{2}$	1 15	3 6 $\frac{1}{2}$	Very poor, over acid.

TABLE XI.

No	Breed	Weight of milk		Weight of cheese time of making	Weight of cheese 12 weeks after Show	Loss in weight	Remarks.
		Whole	Separated				
1	Shorthorn	Gall.	Gall.	Lb. oz.	Lb. oz.	Lb. oz.	Good quality, over kept.
2	Holstein	6	—	8 15 $\frac{1}{2}$	5 11	3 4 $\frac{1}{2}$	Very good quality, over kept.
3	Jersey	6	—	8 6 $\frac{1}{2}$	4 15 $\frac{1}{2}$	3 0 $\frac{1}{2}$	Good quality, over kept.
4	Shorthorn	6	—	9 8	6 4 $\frac{1}{2}$	3 3 $\frac{1}{2}$	Very fair quality, over ripe.
5	Holstein	4	2	8 7	4 8 $\frac{1}{2}$	3 14 $\frac{1}{2}$	Poor quality, very dry, not ripe.
6	Jersey	4	2	7 11	3 12 $\frac{1}{2}$	3 11 $\frac{1}{2}$	Poor quality, brittle, not ripe.
				8 5 $\frac{1}{2}$	4 7 $\frac{1}{2}$	3 14	

The milks selected were as follows:—Shorthorn, South Devon, Holstein, Ayrshire, Jersey, Guernsey, and Dexter.

One and a half gallons of milk, both morning and evening, were obtained from each breed, and, after straining, were allowed to stand from six to eighteen hours before scalding.

The best results were obtained from each sample of milk when treated as shown in the following table.

TABLE XII.

Breed	Best maximum temperature at which to scald	Time for scalding	Remarks
Shorthorn . . .	185° Fahr.	30 minutes	Good flavour and appearance.
South Devon . . .	190 "	50 "	Colour and flavour excellent.
Holstein . . .	175 "	30 "	Pale colour, flavour good.
Ayrshire . . .	170 "	25 "	Pale colour, good flavour.
Jersey . . .	195 "	50 "	Colour and flavour good.
Guernsey . . .	185 "	35 "	Colour and flavour excellent.
Dexter . . .	175 "	30 "	Pale colour, flavour good.

The experiment generally pointed to the fact that the richer milks do not require to be stood so long before scalding as those showing a smaller percentage of fat.

The Jersey and Guernsey milks when stood for eighteen hours before scalding both turned sour. The South Devon milk was not affected so much as the Channel Island milk, but the Ayrshire stood the eighteen hours' setting well, and could have been left longer.

The result of this work during the week showed:—

(a) That rich milks should not be stood too long before scalding, especially in hot weather, and that they require to be heated to a higher temperature, and kept a little longer at that temperature, before the scalding process is finished.

(b) That with proper treatment the milks from cows of any breed should produce excellent cream, the colour alone showing the distinction between the different breeds.

I desire before closing this report to place on record my indebtedness to Mr. H. S. Gordon, my Assistant Steward, for most valuable help and assistance throughout the week: to Miss Kirke, the head Dairy Assistant, to the Misses Noble, Blunt, Mason and Taylor, who carried out the cheese experiments; to Miss Nicholas, who conducted the scalded cream tests; and to the other assistants, who worked most assiduously throughout the week.

ERNEST MATHEWS.

Little Sharelloes,
Amersham, Bucks.

REPORT OF THE COUNCIL TO THE
ANNUAL GENERAL MEETING OF GOVERNORS
AND MEMBERS OF THE SOCIETY,

HELD AT THE ROYAL AGRICULTURAL HALL, ISLINGTON, N.

On WEDNESDAY, December 8, 1915, at 2.30 p.m.

The Council have to report that the list of Governors and Members has undergone the following changes during the year which has elapsed since the Annual General Meeting on December 9th, 1914: 23 new Governors (including 4 transferred from the list of Members under By-law 7), 307 new Members have joined the Society, and 2 Members have been re-instated under By-law 14; whilst the deaths of 3 Life Governors, 10 Governors, 1 Honorary Member, 106 Life Members, and 178 Members have been reported. A total of 34 Members have been struck off the books under By-law 12, owing to absence of addresses; 144 Members under By-law 13, for arrears of subscriptions; 1 Governor and 275 Annual Members have resigned; and 2 Members have been dismissed from the Society in accordance with By-law 18.

Since the last Annual Meeting, the losses by death include one Trustee, the Earl of Jersey, G.C.B., and two Vice-Presidents, the Earl of Feversham and Lord Rothschild.

Lord Jersey, who gained distinction in many walks of life, was one of the oldest members of the Council, which body he joined in 1883. When he became Governor-General of New South Wales in 1890, Lord Jersey gave up his seat on the Council; but on his return to this country in 1894 he was again elected. He became a Vice-President in 1894, a Trustee in 1908, and was President in 1909, when the Show was held at Gloucester. Of late years failing health had prevented his Lordship's attendance at the Council Meetings, but until the last he was keenly interested in agricultural and rural affairs.

Lord Feversham, at the time of his death, was, with one exception, the oldest member of the Council, which he joined in the year 1876. He became a Vice-President in 1888, and occupied the Presidential Chair during the year 1892, when the annual country meeting took place at Warwick.

Although Lord Rothschild's actual association with the Council was not of long duration, his generous assistance on many occasions had been of the greatest benefit to the Society and to the cause of Agriculture in general.

The deaths have also to be recorded of Sir John Barker, Bart., Mr. Ernest A. Hamlyn, and Mr. Henry Smith, of Cropwell Butler, who had at different periods served on the Society's governing body.

Amongst other Governors and Members whose loss the Society has to deplore are:—His Highness Prince Alexis Dolgorouki, the Marquis of Londonderry, K.G. (L.G.), the Earl of

Bradford, Earl Cadogan, K.G. (G.), Lord Addington, Lord Zouche, Major the Hon. L. F. G. Byng, Sir F. E. S. Adair, Bart., Col. Sir Edmund Antrobus, Bart., Sir T. Fowell Buxton, Bart., G.C.M.G., Sir William Eden, Bart., Sir J. M. F. Fuller, Bart., K.C.M.G., Sir H. F. Grey, Bart., Sir Samuel Hoare, Bart., Sir G. B. Jenkinson, Bart., Sir Arthur Lawson, Bart., Sir R. Lucas-Tooth, Bart., Sir Oswald Mosley, Bart., Sir Andrew Noble, Bart., K.C.B., Sir James Rankin, Bart., Sir Charles Seely, Bart., Sir Peter C. Walker, Bart., Elizabeth Lady Cooper, Prof. Sir A. H. Church, K.C.V.O., F.R.S., Sir Frederick Howard, Baron De Rutzen, Mr. B. St. John Ackers, Mr. S. H. Allen (1862), Mr. William Arkell, Mr. Jonathan P. Baird, Mr. John Jackson Bell, Mr. William Bellamy, Mr. T. B. Bolitho, Mr. Robert Bond, Mr. A. E. Brooke-Hunt, Mr. Robert Brydon, Mr. Robert Christison (G.), Mr. Cary Coles, Mr. G. B. Cooke-Yarborough, Mr. John A. Cullwick, Mr. G. W. Dancocks, Mr. T. Hooper Deacon, the Rev. H. J. De Salis, Mr. F. F. Downward (New Brunswick), Mr. J. B. Ellis, Mr. W. S. Everitt, Mr. Robert Fellowes (G. 1850), Mr. W. S. Ferguson (Pictstonhill), Mr. E. S. Godsell, Mr. James Grimbles Groves (G.), Col. H. Harrison-Broadley, M.P., Mr. E. B. Haygarth, Mr. J. J. Hornby, Mr. James W. Kimber, Mr. J. M. King, Mr. R. J. Lambert, Mr. Herbert Leney, Mr. C. D. Mare, Mr. H. J. Marshall (1861), Major-General G. H. L. Milman, Mrs. Montefiore, Mr. J. N. Norman (1857), Mrs. Perry-Herrick, Mr. Leopold Salomons (G.), Major P. G. Shewell (G.), Mr. John Shillito, Mr. James Sinclair, Mr. Thomas C. Smith, Mr. James Stratton, Mr. J. C. Toppin, Mr. Alfred G. Vanderbilt, Col. V. W. B. Van De Weyer, and Mr. J. Willing.

The deaths of the following Members of the Society have occurred whilst on active service:—Mr. W. E. G. Atkinson, Sir Montagu A. R. Cholmeley, Bart., Lieut. Sir Roland J. Corbet, Bart., Second-Lieut. Lionel A. Dashwood, Lieut. J. S. Davey, Sir George H. Farrar, Bart., D.S.O., Capt. the Hon. Coulson Fellowes, Capt. George B. T. Friend, Capt. H. B. Galloway, Capt. Stephen Garrett, Lieut. W. G. C. Gladstone, M.P., Second-Lieut. R. Myles Heywood, Capt. Sir Edward Hulse, Bart., Capt. Mervyn Lloyd, Major G. F. M. Montgomerie, Lord Petre, Col. B. E. Phillips, Mr. B. A. Postford, Lieut.-Col. J. A. C. Quilter, Capt. C. N. Ridley, Major Andrew Roddick, Capt. E. C. Simon, Lieut. Kenneth S. Trotter, Mr. Noel P. J. Turner, Mr. E. O. R. Wakeman, Lieut. Gordon Jacob Wilson, Capt. F. W. Yates, junr.

The above, and other changes, bring the total number of Governors and Members now on the Register to 10,144, divided as follows:—

- 182 Annual Governors;
- 88 Life Governors;
- 7,317 Annual Members;
- 2,529 Life Members;
- 28 Honorary Members;

10,144. Total number of Governors and Members as against a total of 10,570 Members on the Register at the time of the last Annual Report.

To fill vacancies which have occurred during the year, the Hon. Cecil Parker has been elected a Trustee, and the Duke of Portland, K.G., the Duke of Richmond and Gordon, K.G., and Mr. Ernest Mathews have been elected Vice-Presidents. Mr. J. Bell White, of Alderbourne Manor, Gerrards Cross, has been elected to represent the Division of Buckinghamshire in place of Mr. Mathews.

Under the scheme of rotation settled in 1906, the Members of Council who retire at the Annual Meeting in December next, are those representing the following electoral districts comprising Group "C":—Cumberland, Westmorland, Yorkshire, East Riding, North Wales, Lincoln, Huntingdon, Cambridge, Oxford, Kent, Warwick, Gloucester, Glamorgan, Somerset, Berkshire, Sussex, and Ireland. The Members of the Society resident in those districts have all been communicated with, and the necessary measures are being taken for the election or re-election of representatives for the divisions concerned.

In accordance with the By-laws, the balance-sheet has to be presented for consideration at the Annual General Meeting. The Council therefore beg to submit the balance-sheet for the year 1914, with the Statement of Ordinary Income and Expenditure. These accounts were published in Volume 75 of the Journal issued to Members early this year, having been duly examined and certified as correct by the Auditors appointed by the Members, and by the professional Accountants employed by the Society.

In the Showyard at Nottingham, the Finance Committee held a Special Meeting to consider what effect the new War Loan would have on the finances of the Society. On their recommendation, the Council decided to convert the whole of the Consols held in the names of the Society and various Trustees into $4\frac{1}{2}$ per cent. War Loan Stock, and a Sub-Committee was appointed to carry the proposal into effect.

Following the precedent of 1870, when a fund was raised at the instance of the Society for the assistance of the Peasant Farmers of France, the Council, in January last, appointed a Committee (with power to add to its number) to prepare a scheme for the alleviation of the distress caused by the war to agriculturists in the countries of Britain's Allies. Agricultural and kindred societies appointed representatives to serve on the General Committee, and at a meeting held in February more than seventy societies, with an aggregate membership of over 100,000, were represented. His Grace the Duke of Portland, at the outset, was good enough to head the movement as President, and it was decided that the title of the new body should be The Agricultural Relief of Allies Committee. Mr. Charles Adeane kindly undertook the office of Hon. Treasurer, and Mr. McRow was appointed Hon. Secretary. The Directors of the International Horse Show—through their Chairman, the Earl of Lonsdale—have generously given the services of their Clerical staff for the carrying out of the work of the Committee, and Mr. F. F. Euren has been appointed Hon. Assistant

Secretary of the Fund. A representative Executive Committee was appointed under the chairmanship of the Earl of Northbrook, and through the exertions of this body, in co-operation with local agricultural institutions, subsidiary Committees have been brought into being in almost every county for promoting the objects of the Fund. At an early period in their deliberations, the Executive Committee, as the result of representations from different quarters, found it necessary to consider the question of the particular countries to which relief was to be given, and it was decided to assist, as far as possible, the agriculturists of those countries of our Allies which have suffered from the War.

His Majesty the King graciously extended his Patronage to the Fund, towards which His Majesty made a donation of £100. In conjunction with the Royal Horticultural Society, the "Allies" Committee (in April) despatched a sum of money to Serbia for the immediate purchase of Seeds and small implements, and a special commissioner proceeded to the country of our long-suffering and gallant ally in the Balkans to superintend the distribution. As the result of his visit the Committee have been able to issue an interesting report on the agricultural situation and needs of Serbia.

Another sphere has been found for the exercise of the Committee's activity in the Marne and the Meuse districts of France. Lord Northbrook, Mr. Anderson Graham, and Mr. Aeneas visited these devastated areas, and the latter, in a report which has recently been printed for circulation, graphically describes the conditions prevailing in those parts of the country which have been won back from the enemy. Subsequently Mr. Colin Campbell, Mr. Samuel Kidner, Mr. P. Hurd, and Mr. Charles Macdonald also visited these districts.

Already, practical assistance has been rendered to the French farmers in the shape of implements such as binders, threshing machines, ploughs, harrows, etc., live stock comprising South-Down Sheep, Pigs and Goats, and a number of consignments of Seed wheat for autumn sowing has also been shipped. Gifts of Poultry for shipment in the near future are now being collected.

The R.A.S.E.—as the initiator of the Fund—made to it a contribution of £1,000. Up to date, the sum of £26,000 has been received or promised, in addition to gifts in kind. It will, however, be readily understood that the task before the Committee is one of considerable magnitude, and they therefore appeal most earnestly to members of the British agricultural community to be as generous as they are able to be in their donations to the Fund. Cheques or promises should be addressed to the Hon. Treasurer, Agricultural Relief of Allies Fund, 16, Bedford Square, London, W.C.

Though the entries of live stock at Nottingham were below the numbers of recent years, there was certainly no lack of quality in the exhibits. The Show, which was held in Lord Middleton's Park at Wollaton from Tuesday, June 29th, to Saturday, July 3rd, opened under anything but favourable climatic

conditions. On the second day, with but brief intervals, rain fell almost continuously, and there was much thunder and lightning. On Thursday the weather was threatening in the early hours, but in the course of the morning there was a great improvement, and for the rest of the week the Show was favoured with beautiful weather.

In view of the exceptional circumstances of the year, there was on this occasion no "fund" raised by the Local Committee. The Corporation of Nottingham, however, kindly provided the usual contribution of £2,000 towards the Society's expenses, and a further sum of £741 1s. was contributed by a few noblemen and gentlemen interested in the Show, and Members of the Nottinghamshire Agricultural Society, the latter subscriptions being kindly collected by Mr. W. H. Bradwell.

In spite of the unfavourable weather on the first two days of the Show, the aggregate attendance for the five days was 103,883, and the financial result was a debit balance of £2,945, which, when everything is taken into consideration, cannot be regarded as unsatisfactory.

Although, as previously stated, the Local Committee raised no Fund as on former occasions, the Society is nevertheless much indebted to the Mayor of Nottingham (Mr. Alderman Gregg), the Sheriff (Mr. Councillor Small), and the other members of the Committee, for their exertions in connection with the Show. Acknowledgment must also be made of the valuable services rendered by the Local Hon. Secretaries, Mr. Board (Town Clerk), and Mr. Bradwell. The latter gentleman was much in request during the preparations for the Show, and worked indefatigably to make it a success.

At the suggestion of the Sheriff of Nottingham (Mr. Councillor Small), a competition open to farmers supplying milk daily to Nottingham from the counties of Notts, Derby, and Leicester was organised this year. Out of 103 entries, the milks from 98 herds were sampled and analysed in the Nottingham City Health Department's Laboratories. The Report of the Society's Steward of Dairying on this competition, together with the report on the Milk Yield Trials and Butter Tests carried out at the Nottingham Show, has been issued as a pamphlet at the price of sixpence. The Society has also issued recently a leaflet on the composition of milk.

The Manchester Show will be held on the site near Alexandra Park and Withington Stations from Tuesday, June 27th to Saturday, July 1st, 1916. An influential Committee has been appointed of representatives of the County and City to raise the necessary funds for carrying out the local requirements, and arrangements have been satisfactorily concluded with the Royal Lancashire Agricultural Society, who have decided not to hold their Show in the year 1916.

The Schedule of Prizes for Live Stock, Poultry and Produce at the Show to be held at Manchester will be issued early in the New Year.

Offers of Champion and other prizes have been received from the following Breed Societies:—Shire Horse Society, Clydesdale Horse Society, Suffolk Horse Society, Hunters' Improvement and National Light Horse Breeding Society, National Pony Society, Welsh Pony and Cob Society, Shorthorn Society, Dairy Shorthorn Association, Devon Cattle Breeders' Society, South Devon Herd Book Society, Longhorn Cattle Society, Sussex Herd Book Society, Welsh Black Cattle Society, Red Poll Cattle Society, Aberdeen Angus Cattle Society, English Aberdeen Angus Cattle Association, British Holstein Friesian Cattle Society, English Jersey Cattle Society, English Guernsey Cattle Society, English Kerry and Dexter Cattle Society, Shropshire Sheep Breeders' Association, Southdown Sheep Society, Hampshire Down Sheep Breeders' Association, Suffolk Sheep Society, Dorset Horn Sheep Breeders' Association, Ryeland Flock Book Society, Kerry Hill (Wales) Flock Book Society, Lincoln Long Wool Sheep Breeders' Association, Leicester Sheep Breeders' Association, Society of Border Leicester Sheep Breeders, Lonk Sheep Breeders' Association, Kent or Romney Marsh Sheep Breeders' Association, Exmoor Horn Sheep Breeders' Association, Breeders of Cheviot Sheep, Breeders of Herdwick Sheep, National Pig Breeders' Association, British Berkshire Society, Lincolnshire Curly Coated Pig Breeders' Association.

The following Challenge Cups are again also offered:—

- £50 Silver Cup for the best Suffolk Stallion.
- Fifty Guinea Cup for best Riding Hunter.
- Fifty Guinea Cup for the best Hack or Riding Pony.
- Fifty Guinea Cup for best Single Harness Horse.
- Fifty Guinea Cup for the best Pair of Harness Horses.
- Fifty Guinea Cup for the best Tandem.
- Fifty Guinea Cup for the best Group of Dairy Shorthorns.
- £20 Silver Cup for the best Animal in the South Devon Cattle Classes.
- £15 Silver Cup for the best Longhorn Bull or Cow.
- £15 Silver Cup for the best Longhorn Yearling Bull or Heifer.
- Twenty-five Guinea Silver Cup for the best Animal in the Kerry Classes.
- Twenty-five Guinea Silver Cup for the best Animal in the Dexter Classes.
- Sixty Guinea Silver Cup for the best Border Leicester Ram or Ewe.
- Twenty Guinea Cup for best Large Black Sow.
- £20 Silver Cup for best Berkshire Pigs.

Classes are provided for Pit Ponies which have been working in the Pits since January 1st, 1916. These Ponies to be shown without Tubs, in ordinary gears.

Eleven classes for Goats, including one for milk yield, have been arranged. The Manchester Local Committee and the British Goat Society have contributed towards the prizes in this section.

A Flower Show and a Dog Show will be held.

In the Poultry Section Special Prizes are being contributed by the following Clubs:—Black Wyandotte Club, White Orpington Club, Black Orpington Club, Blue Orpington Club, Spangled

Oxington Club, Dorking Club, Sussex Poultry Club, International Buttercup Club, British Rhode Island Red Club, Blue Leghorn Club, Yokohama Club, Malines Poultry Club, Campine Club.

In the Produce section Classes and Prizes will be provided for Butter, Cheeses made in 1916, Cider and Perry, Bottled Fruits, Bottled Vegetables, and for Bacon and Hams.

With regard to the Wool Classification it has been decided to include separate Classification for Wool of the respective Breeds whose Breed Societies desire their inclusion in the Prize Sheet; also classes will be provided for Wool from Cross-Breed Sheep.

As previously announced, the Council have accepted an invitation from Cardiff to hold the Show of 1917 in that City.

The Council have to record the generous gift to the Society's Library by Mr. W. Robinson, of Gravetye, East Grinstead, of 29 volumes of works by Arthur Young. Apart from their market value, these books have an added interest, inasmuch as the book-plate and written notes inside them would appear to indicate that they were once in the possession of Young himself.

There has been a marked falling-off in the number of samples sent by members to the Society's laboratory for analysis. Whereas in 1914 a slight increase—from 393 to 416—was shown, the total has this year gone down to 276. It would be hard to find an adequate reason for this, for while it is true that fertilisers and feeding-stuffs alike (the latter in particular) have become much dearer, one would be disposed to think that this fact would supply an additional reason for checking the qualities of deliveries made, in order to see that the higher cost was warranted by the goods fully answering the guarantees given. Notwithstanding the many other facilities provided for obtaining analyses, it seems extraordinary that, with such facilities as the Society gives, out of a membership of over 10,000, representing necessarily the purchase of many hundreds of tons of both fertilisers and feeding stuffs, only six members (as against 29 in 1914) should think it necessary to have the quality of their purchases of Basic Slag tested by the Society's Chemist, or more than six members and ten members respectively the quality of the cotton cake or linseed cake they bought, despite the very high prices of these. Not a single sample of nitrate of soda was sent, and only four of sulphate of ammonia.

The supply of potash salts, as was anticipated, has been almost at a standstill, and, in spite of the many suggestions—such as that of kelp-burning, the collecting of wood ashes, and so forth—put forth to supply the need—practically nothing has been done, and it looks much as if we should “muddle on” without potash salts until the war is over. Still, a few samples of waste materials, such as the ashes of horse and other droppings collected at camps, have been sent for estimation of potash and other manurial constituents.

There has been a heavy fall, too, in the number of samples of water sent for analysis—there being 37 only as against 85 in 1914.

Among feeding materials palm-nut meal and coco-nut meal, favoured by their comparatively low price—have come much more into use.

Cases of adulteration and impurity have been found to occur mainly with compound foods known under the vague term "Pig Meal." In addition to the samples sent by Members there were 199 samples of milk and 12 samples of cider analysed in connection with the Nottingham Show.

Despite a year marked by a long period of summer drought, the Woburn Experimental Farm has done quite well. The wheat crop, even on the light sandy soil of Woburn, was good, and the continuous wheat plots (39th season), have given higher results than for several years past, as evidenced by plots 1 and 7, which, though they have received no manure whatever, and though wheat has been grown on them year after year for 39 years, gave this season between 12 and 13 bushels of corn per acre.

In consequence of the inability of the railway companies to provide any special facilities, it was, to general regret, found impossible to hold the usual Annual Visit of members to the Farm, and the same cause contributed to the Farm being less visited this year by associations and individuals. Still there were many features of interest which will be reported on in the Journal. Chief among these were the success attending the inclusion of "wild" white clover in "seeds" mixtures, the growing of linseed and of sugar-beet, and the use of magnesia for corn.

The continuation of the calf-rearing experiments, commenced in October, 1912, gave rise to much interest and occasioned much correspondence. A new series, begun in October, 1915, will carry on this useful work a further stage.

At the Pot Culture Station, Mr. Jas. Crabtree, M.Sc., A.I.C., has been appointed to take the place of assistant chemist, so long and worthily held by the late Mr. Freear. The chief experiments of the year embraced those on the influence of Boron compounds on plant life, and others on the use of Professor Bottomley's "prepared peat."

At Chelsing, Herts, the trial, on the field scale, of means found, at the Pot Culture Station, to be effectual in eradicating "wild onion" has been carried a stage further, and with continued success.

From a numerical point of view the enquiries received in the Botanical Department were very similar to those of the previous year.

Some 200 samples of seeds were tested. These included a smaller number of grass seeds than usual, but the deficiency was made up by an increase in the number of cereals. No information was asked for with regard to seed mixtures for permanent pastures, but there were a few enquiries for mixtures for renovating purposes.

Identifications of 65 specimens of grasses, cereals and weeds were made, and reports sent on 12 specimens of plants attacked by fungoid diseases.

General enquiries were again very numerous. Amongst the 110 received were several dealing with the cultivation of such drug plants as foxglove and henbane, with varieties of spring wheats, with various garden crops, timber preservatives and fungicides.

The enquiries dealt with by the Zoological Department have, as usual, covered a very wide range, and advice has been given with regard to a large number of pests—chiefly insect and arachnid—attacking farm crops, fruit trees, forest trees, and domestic animals. A few unusual cases have been noted, but these have not generally been important. The most serious and widespread attack has been that of the sainfoin midge, which has done much harm in many localities, occurring to an unprecedented extent.

Numerous specimens of more or less interest have been sent for identification, and several enquiries have had reference to insects of sanitary importance, such as house flies and human parasites.

From the beginning of the year until the 21st October, when an outbreak at Monkton Combe, near Bath, was confirmed, the country was free from foot-and-mouth disease. Since that date the disease has unfortunately been spread to other centres, and 38 outbreaks, with 272 animals attacked, have occurred in the counties of Somerset, Wilts, and Pembroke. The usual steps have been taken by the Board of Agriculture and Fisheries to stamp out the disease, but it is understood that exceptional difficulties arose at the outset, owing to the fact that the disease appeared to have been in existence for at least a fortnight before it was reported.

Except in the case of swine fever the position with regard to the other contagious diseases has been satisfactory. There has been a distinct reduction in the number of outbreaks of anthrax, and glanders has reached the lowest point since it was first scheduled as a contagious disease. The number of outbreaks of sheep scab has been about the same as in recent years, but swine fever remains at the very high level of frequency which it reached in 1914.

As the result of the competitive examination at the Royal Veterinary College for the Society's Medals for proficiency in Cattle Pathology, including the diseases of Cattle, Sheep, and Pigs, the Silver Medal has been awarded to Mr. R. H. Penhale, of Penbode, Holsworthy, Devon, and the Bronze Medal to Mr. W. R. McKinna, of 20, Ramsden Street, Huddersfield.

The Council, in the month of May, had under consideration the subject of the regulations governing the importation into the Argentine Republic of Stock from this country, and a

resolution was passed calling "the attention of the Board of Agriculture to the fact that, although negotiations with the Argentine Government have been in progress for many months past with reference to the modification of the regulations governing the exportation of live stock from this country to the Argentine, no satisfactory result appears to have been arrived at, and impressing upon the Board the importance of immediate steps being taken to expedite matters in view of the near approach of the usual shipping season."

In their reply the Board stated that they were still in correspondence, through the Foreign Office, with the Argentine Government, with a view to a modification of the Argentine regulations governing the importation into Argentina of live stock from this country. All possible steps had been, and were being taken by the Board and the Foreign Office to expedite the matter. It was pointed out, however, that—provided no further cases of foot-and-mouth disease occurred, the decree of the Argentine Government would, in the ordinary way—in view of the expiration of the six months' embargo—be revoked shortly before or after the 24th June. As a matter of fact, the official announcement of the opening of the Argentine ports to British stock was made during the week of the Nottingham Show.

The Board of Agriculture issued a notification dated November 25th, to the effect that, in accordance with the new requirements of the Argentine Government, official certificates can now be issued in respect of cattle, sheep, goats and swine which have been located during the preceding *three and a half months* in counties in which foot-and-mouth disease has not existed during that period. The exportation of live stock from the United Kingdom is prohibited now by Order in Council, but applications for licences to export may be made to the War Trade Department, 4, Central Buildings, Westminster.

In response to a request received from the Argentine Rural Society early this year the Council appointed five gentlemen to act as Judges of Stock at the Palermo Show in August. A letter has since been received from the President of the Argentine Society stating that the judges carried out their duties "with great competence and discretion" and "that their verdicts were not only respectfully accepted, but were also applauded for their justice." The letter adds that "This Society is profoundly grateful to the Royal Agricultural Society of England for the very important services rendered, and appreciates it more especially as we understand the enormous difficulties of a general character you have had to overcome on account of the terrible war, and we sincerely trust that we will be favoured with the same attention for our future Shows."

Mr. Luddington, the Chairman of the Chemical and Woburn Committee, has been appointed as a representative of the Society on the governing body of the British Sugar Beet Growers Association, Limited.

The Council have signified their approval of the suggestion that the Gilbey Lectureship in the History and Economics of Agriculture at Cambridge University should be suspended owing to the Lecturer's absence on military service.

The Trustees of the "Queen Victoria Gifts" Fund have made a grant of £140 for the year 1915 to the Royal Agricultural Benevolent Institution, to be distributed as fourteen grants of £10 each to the five male candidates, five married couples, and four female candidates who polled the largest number of votes in their class, and who would not this year receive grants from any other fund in connection with the Royal Agricultural Benevolent Institution. Mr. Adeane has been appointed a Trustee of the Fund in the room of the late Sir Walter Gilbey.

The Sixteenth Annual Examination for the National Diploma in Agriculture was held at the Leeds University from the 16th to the 22nd April last, when thirty-six candidates were successful in obtaining the Diploma, the first three gaining Honours. For list, see page 278.

The Twentieth Examination for the National Diploma in Dairying was held this year for English students from September 11th to 17th, at the University College and British Dairy Institute, Reading; and for Scottish students from September 17th to 23rd, at the Dairy School for Scotland, Kilmarnock. Twenty-two candidates were examined at the English Centre, of whom fifteen were successful, and at the Scottish Centre twenty-eight candidates were examined, of whom twenty-two passed. The names of the Diploma winners will be found on pages 282 and 283.

By Order of the Council,

THOMAS MCROW,

Secretary.

16, BEDFORD SQUARE, LONDON, W.C.

NATIONAL AGRICULTURAL EXAMINATION BOARD.

I.—REPORT ON THE RESULTS OF THE SIXTEENTH EXAMINATION FOR THE NATIONAL DIPLOMA IN AGRICULTURE,

HELD AT LEEDS, APRIL 16 TO 22, 1915.

1. THE Sixteenth Examination for the NATIONAL DIPLOMA IN AGRICULTURE was, by the courtesy of the authorities, held at the University of Leeds from the 16th to the 22nd April last. The subjects of Examination were Practical Agriculture (two papers), Farm and Estate Engineering (including (a) Surveying, (b) Farm Buildings, (c) Machinery and Implements), Agricultural Chemistry, Agricultural Botany, Agricultural Book-keeping, Agricultural Zoology, and Veterinary Science. Under the Regulations, the whole eight papers may be taken at one time, or a group of any three or four in one year and the remaining group of four or five in the year following. Candidates taking the whole Examination in one year who fail in not more than two subjects are allowed to take those subjects alone in the succeeding year. Candidates failing in a single subject of a group are permitted to take that subject again in conjunction with the second group.

2. One hundred and one candidates presented themselves on this occasion (as compared with 139 last year). Four candidates sat for all subjects, and 50, who had previously passed a portion of the Examination, appeared for the remaining subjects. The other 47 candidates presented themselves for a group of three or four subjects.

3. As the result of the Examination, 36 candidates were successful in obtaining the Diploma, 3 *with Honours*. In the list given below the names of the 3 candidates who passed with Honours are given in order of merit, and the other 33 are placed in alphabetical order:

Diploma with Honours.

1. JOHN WILSON, West of Scotland Agricultural College, Glasgow.
2. JAMES KER BELL, Edinburgh and East of Scotland College of Agriculture, Edinburgh.
3. JOHN CURRIE HOWIE, West of Scotland Agricultural College, Glasgow.

Diploma.

- RICHARD BRETHERTON, Harris Institute, Preston.
 GEORGE DUNCAN BROWN, University of Leeds.
 WILLIAM A. C. CARR, Marischal College, Aberdeen.
 STEPHEN M. CHERRIE, West of Scotland Agricultural College, Glasgow.
 WILLIAM CROMIE, Royal College of Science, Dublin.
 PAUL ALEXANDER EXLEY, University of Leeds.
 JAMES BUTLER GODDARD, Harris Institute, Preston.

NORMAN S. GRIEVE, Aberdeen and North of Scotland College of Agriculture, Aberdeen.
 FRANK LESLIE HALL, Harper-Adams Agricultural College, Newport, Salop.
 Miss ANNIE JANE HASTINGS, West of Scotland Agricultural College, Glasgow.
 ALEXANDER HAY, Edinburgh and East of Scotland College of Agriculture, Edinburgh.
 FREDERIC WESTLEY IVENS, Harper-Adams Agricultural College, Newport, Salop.
 EVAN THOMAS JONES, University College of Wales, Aberystwyth.
 VIVIAN GEORGE JONES, Harper-Adams Agricultural College, Newport, Salop.
 JOHN ARCHIBALD MACARTHUR, West of Scotland Agricultural College, Glasgow.
 ANDREW MCBRIDE, West of Scotland Agricultural College, Glasgow.
 JAMES MCLINDEN, West of Scotland Agricultural College, Glasgow.
 THOMAS DUNCAN MOSSCROP, South Eastern Agricultural College, Wye, Kent.
 GEORGE PARK, Harris Institute, Preston.
 BHAILAL S. PATEL, West of Scotland Agricultural College, Glasgow.
 ALAN STEWART PATTEN, Royal Agricultural College, Cirencester.
 HAMO NEWTON PERCIYAL, Harris Institute, Preston.
 JOHN CYRIL PINDAR, Midland Agricultural and Dairy College, Kingston, Derby.
 CHARLES EDWARD PLATT, Holmes Chapel Agricultural College, Cheshire.
 HENRY ROEBUCK, University of Leeds.
 GEORGE EDWARD ROBERTS, University of Leeds.
 CLIFFORD WILLIAM ROWELL, Agricultural College, Uckfield, Sussex.
 HERBERT RAY STEWART, Royal College of Science, Dublin.
 ROY BURCH STRANG, South Eastern Agricultural College, Wye, Kent.
 ALEXANDER JOHN WATT, Aberdeen University.
 JOHN BARTON WHALLEY, Harris Institute, Preston.
 DAVID WYLLIE, West of Scotland Agricultural College, Glasgow.
 HUGH MAIR YOUNG, West of Scotland Agricultural College, Glasgow.

4. Of the 47 candidates who appeared for a group of three or four subjects, the following 25 passed, and are therefore entitled to present themselves for the remaining subjects in 1916¹ :—

JAMES ALEXANDER ANDERSON, West of Scotland Agricultural College, Glasgow.
 ROBERT CAMPBELL BROADFOOT, West of Scotland Agricultural College, Glasgow.
 PATRICK BROUGH, M.A., B.Sc., West of Scotland Agricultural College, Glasgow.
 CHARLES C. CHEATLE, Midland Agricultural and Dairy College, Kingston, Derby.
 FRANK B. COOPER, Harris Institute, Preston.
 JOHN DEMPSEY, Royal College of Science, Dublin.
 FREDERICK GEORGE GRAHAM, Harris Institute, Preston.
 JAMES S. W. HENDERSON, West of Scotland Agricultural College, Glasgow.
 DAVID HENDRY, JUNR., West of Scotland Agricultural College, Glasgow.
 HERBERT C. JAMES, Harris Institute, Preston.
 DAVID P. JOHNSTON, Royal College of Science, Dublin.
 CHARLES G. MACDOWALL, West of Scotland Agricultural College, Glasgow.
 ALEXANDER NELSON, West of Scotland Agricultural College, Glasgow.

¹ To meet the cases of candidates who have passed a portion of the examination, and who, in consequence of their having joined His Majesty's Forces, may be unable to present themselves for the remaining subjects, the Board have agreed to grant to such candidates an extension of one year in which to complete the examination. The Board will also be pleased to consider applications for any further extensions of time that may be found necessary.

BORLAND PITT, West of Scotland Agricultural College, Glasgow.

JOHN WILSON REID, West of Scotland Agricultural College, Glasgow.

JOHN G. RYNEHART, Royal College of Science, Dublin.

JOHN A. ROUTKE, Royal College of Science, Dublin.

ALBERT E. M. SHEPHERD, Midland Agricultural and Dairy College, Kingston, Derby.

THOMAS J. S. SMELLIE, West of Scotland Agricultural College, Glasgow.

DANIEL M. SMELLIE, West of Scotland Agricultural College, Glasgow.

ARTHUR MUSGRAVE SMITH, University of Leeds.

JAMES STEELE, JUNR., West of Scotland Agricultural College, Glasgow.

ERNEST L. TAYLOR, Harris Institute, Preston.

JAMES SHEPHERD THOMAS, Midland Agricultural and Dairy College, Kingston, Derby.

NARAYAN R. K. R. ZANANE, Royal Agricultural College, Cirencester.

5. Thirteen of the 22 unsuccessful candidates sitting for a group of three or four subjects failed in a single subject, which, under the regulations, they will be entitled to take again next year in conjunction with the second group.¹

6. The candidates at this year's Examination came from fourteen different agricultural training institutions in the United Kingdom,

8 English Colleges sending up 49 candidates			
3 Scottish Colleges	"	38	"
2 Welsh Colleges	"	3	"
1 Irish College	"	9	"

99

The remaining two candidates possessed University degrees, and apparently had not taken courses at any agricultural college recognised by the National Agricultural Examination Board.

7. The Reports of the Examiners in the different subjects are appended:—

PRACTICAL AGRICULTURE. (First Paper, 300 Marks. Second Paper, 300 Marks.)
Professor William Somerville, M.A., D.Sc., Mr. John Gilchrist, F.S.I., and Mr. William Barkitt, B.Sc.

The general standard is not high, a result that may to some extent be accounted for by discontinuance of teaching institutions due to the war.

As in previous years, the acquaintance of many candidates with practical agriculture has proved to be distinctly local. While detailed knowledge of the conditions of a particular district is to be encouraged, it is felt that in a National examination a broader outlook is desirable, an aspect of the case that may be commended to those concerned with the preparation of candidates.

FAIRM AND ESTATE ENGINEERING. (300 Marks.) Mr. R. Strachan (Gardiner, F.S.I. (Surveying and Farm Buildings); Professor R. Stanfield, M.Inst.C.E. (Machinery and Implements).

Land Surveying and Farm Buildings.—In the Surveying Section the plotting was well and neatly done, with a few exceptions, but more attention requires to be paid to computing areas, and the use of plotting scales. The knowledge of Ordnance Maps was generally speaking, not satisfactory. In the ord. examination, while a good general knowledge of Surveying was shown, there appeared to be some difficulty in applying the principles to the solution of problems commonly arising in practice.

In the Farm Buildings Section, some of the answers to Question 5 were remarkably good, but the replies to the "Cubing" question showed an imperfect acquaintance with the method. The oral examination revealed an intelligent grasp of the subject.

On the whole, I consider that the work was of a higher standard than in the preceding Examination.

¹ See note on previous page.

Machinery and Implements.—The candidates who presented themselves in this section appear to have acquired a good practical knowledge of the subject, and I was extremely surprised at the intelligent answers I got from them during the *examination*, in which I purposely departed from the questions set in the Paper.

The results on the whole were very satisfactory, and in my opinion the candidates were much better prepared than on the two former occasions I have acted as Examiner.

AGRICULTURAL CHEMISTRY. (300 Marks.) E. J. Russell, D. Sc., and Herbert Ingle, B. Sc.

Speaking generally, the average level of the candidates was good, though it fell below that of last year. There were, however, fewer cases of inability to spell correctly and to write clearly than were noted then. In most cases the College courses in Agricultural Chemistry are obviously sound, and calculated to impart the necessary breadth of view to the students. One defect, however, was noticeable, which to a certain extent is inseparable from a growing subject. As a rule the candidates had endeavoured to read some of the recent papers issued by the Colleges and Experiment Stations, but they found much difficulty in piecing the new knowledge on to the old. Considerable confusion sometimes resulted, and candidates did not hesitate in the course of a few successive lines to set out mutually inconsistent views not only without comment, but apparently without recognising the inconsistency. This defect requires careful watching by the teaching staffs of the colleges.

AGRICULTURAL BOTANY. (300 Marks.) R. Stewart MacDonaghi, M.A., D.Sc.

The average result of the Examination is fairly good. The practical work has, again, on the whole, been satisfactory. Two points call for attention. First, there is a tendency for candidates to come forward to the examination on the strength of their qualifications in pure botany. The examination is one in Agricultural Botany, and candidates cannot be passed who fail to show acquaintance with agricultural plants and seeds, and their habits of life. Secondly, the papers are too often written carelessly, as if the mode of putting down the answers was of no importance. This not only suggests a lack of seriousness on the part of the candidate, but makes the reading of the papers very difficult.

AGRICULTURAL BOOK-KEEPING (200 marks).

Mr. Charles S. Orwin, M.A., F.S.I.

Sixty-seven candidates presented themselves for examination in this subject. The work done was quite equal to that of recent years and practically all of the candidates showed a thorough knowledge of the principles underlying ordinary book-keeping processes. But whereas the examiner has remarked in previous years that there was a lack of appreciation of the need for accurate recording on the farm as a means to its better management and development, he was glad this year to note that many of the candidates were obviously alive to the value of a knowledge of farming costs.

AGRICULTURAL ZOOLOGY (200 marks). R. A. Harper Gray, M.A., M.Sc.

The questions set in the paper relating to Agricultural Zoology were, on the whole well answered, and a pleasing feature was the completeness of many of the answers submitted, showing careful study on the part of many of the candidates. It may be useful to point out, however, that there was a marked absence of illustrative drawings which might have helped greatly in rendering accounts of structure, &c., more clear.

At the oral examinations most of the candidates acquitted themselves well in identifying the various specimens of insect and other animal pests shown to them, while at the same time they evinced an intelligent appreciation of the practical importance of outbreaks of these pests on the farm.

VETERINARY SCIENCE (200 marks). Professor J. Macquies, F.R.C.V.S.

The written portion showed that the candidates had acquired much useful knowledge of the anatomy and physiology of the animals of the farm. In many instances the answers were stated with remarkable clearness, and altogether the written papers, with few exceptions, were distinctly good. In the oral examination, which was less satisfactory, several of the candidates were unable to recognise or describe the simple anatomical specimens (bones, incisor teeth), placed before them. This defect is almost inexcusable, as specimens of bones and teeth are neither expensive nor difficult to procure.

8. The thanks of the Board are again due to the authorities of the University of Leeds, for their liberality and courtesy in placing the Large Hall and other rooms of the University at the Board's disposal for the Examination; and to the Examiners, for the care and attention they bestowed upon the written answers to the papers set, and upon the *viva voce* examination.

J. MARSHALL DUGDALE, *Chairman*.

THOMAS MCROW, *Secretary*.

16 Bedford Square, London, W.C.
May, 1915.

II.—REPORT ON THE RESULTS OF THE TWENTIETH EXAMINATION FOR THE NATIONAL DIPLOMA IN DAIRYING, 1915.

1. The Twentieth Annual Examination for the National Diploma in the Science and Practice of Dairying took place in September, 1915. The Examination was held for English candidates at the University College and British Dairy Institute, Reading, from September 11 to 17; and for Scottish candidates at the Dairy School for Scotland, Kilmarnock, from September 17 to 23.

2. Twenty-three candidates presented themselves at the English Centre, and of these the following fifteen satisfied the Examiners, and have therefore been awarded the National Diploma in the Science and Practice of Dairying:—

MAGGIE ASTLEY, Lanes. C.C. Dairy School, Hutton, Preston.
ANN BRETHERTON, Lanes. C.C. Dairy Sch.-ol. Hutton, Preston.
CONSTANCE BUTTERWORTH, University College and British Dairy Institute, Reading.
MILES JOHN JAMES CLAYTON, Midland Agricultural and Dairy College, Kingston, Derby.
KATULEEN FREEAR, Midland Agricultural and Dairy College, Kingston, Derby.
EVAN THOMAS JONES, University College of Wales, Aberystwyth.
KATE KING, Midland Agricultural and Dairy College, Kingston, Derby.
IDA MAUD LOOK, Midland Agricultural and Dairy College, Kingston, Derby.
ANNIE McGLASHAN, Lanes. C.C. Dairy School, Hutton, Preston.
SYBIL MART, Lanes. C.C. Dairy School, Hutton, Preston.
ALICE M. MOYLAN, University College and British Dairy Institute, Reading.
ALICE MARY TAYLOR, Midland Agricultural and Dairy College, Kingston, Derby.
KATHLEEN MARY THORNBERRY, University College and British Dairy Institute, Reading.
HILDA EVELYN ELLINGWORTH, East Anglian Institute of Agriculture, Chelmsford.
FLORENCE MAY TWOSE, University College and British Dairy Institute, Reading.

Two candidates (H. Poynton Borlase and Thomas Joseph Gripper) entered, in August, 1914, for the Examination which took place in September of last year, but, in consequence of their having—meanwhile—obtained Commissions in H.M. Army, they were prevented from presenting themselves for examination. Representations were made by the Registrar of the University College, Reading, and papers written by these two candidates in reply to special test questions set by the late Manager of the British Dairy Institute were sent in on their behalf.

with the request that their cases might receive special treatment. The National Agricultural Examination Board, after full consideration, decided, under the exceptional circumstances, to submit the papers to Professor Gilchrist and Mr. John Benson for their opinion as to whether the written answers contained sufficient evidence of efficiency to justify the award of the National Diploma in Dairying. The Examiners having expressed the opinion that both the candidates in question were up to pass standard, the Diploma has been awarded to

II. POYNTON BORLASE, S.E. Agricultural College, Wye; University College and British Dairy Institute, Reading.

THOMAS JOSEPH GRIPPER, S.E. Agricultural College, Wye; University College and British Dairy Institute, Reading.

3. At the Scottish Centre, twenty-eight candidates were examined, and of these the twenty-two whose names and addresses are given below gained the Diploma :—

ROBERT C. R. BOYD, Allanbank, Fairlie.

RICHARD BRETHERTON, 38 Union Street, Leyland, near Preston.

MARGARET SUSAN COBBAN, Culmill, Kiltarity, Beaulieu.

JEANNIE FARQUHARSON, Scotstoun, Inscrh.

ANNIE JANE HASTINGS, Ashcroft, Dalton, Lockerbie.

ANDREW M'BRIDE, Overton Farm, Kilmaurs.

ISABEL M'CUOHEON, Kirkmahreck, Oretown.

JESSIE A. M'FARQUHAR, Dell, Ness, Lewis.

MARY FERGUSON M'GILVRAY, Highlands Farm, Bowmore.

BARBARA MARY MORRIS, Killinister, Wick.

BHAILAL SHANKERBHAI PATEL, Bhadran, via Borsad, India.

MADGE RAE, Southfield Cottage, Alma Place, Elgin.

ISABELLA ROSS, Burnside, Beaulieu.

CAROLINE CATHERINE SINCLAIR, Coronation Road, Wick.

MARGARET H. STEWART, 109 Bon Accord Street, Aberdeen.

ERNEST LEONARD TAYLOR, Ingleside, Ansdell Road, Lytham, Lancs.

ROBERT TAYLOR, Junr., 41 South Street, Greenock.

JOHN DUNLOP TENNANT, Glenauthier, Stewarston.

FANNY WATTS, The Castle Farm, St. George-super-Ely, near Cardiff.

MORFYDD WATTS, Llaminlhangel Place, Cowbridge, Glamorgan.

JOHN WILSON, New Road, Mauchline.

JESSIE MITCHELL WYLLIE, Mossgeil, Mauchline.

4. Professor Douglas A. Gilchrist, who conducted at both centres the examinations in General Dairying, in Practical Butter-making, and in capacity for imparting instruction, reports that "At Reading the best candidates were not of the same high standard as last year, but, on the average, the work was quite good. The answers were especially good to the questions on the different systems of calf-rearing and on the management of milch cows. The answers to the question on a suitable system of book-keeping for a dairy farm from which milk is retailed were not so good. Most of the candidates had evidently received careful instruction in book-keeping, but some of them had difficulty in making it applicable to a dairy farm. Some of the answers also to the practical question on poultry-keeping were not quite satisfactory.

"At Kilmarnock the longer practical training on dairy farms which most of the candidates have received was distinctly evident in the results. The answers to the practical questions on General Dairying and Dairy Farming, as well as on the Breeding of Pigs, were generally good, but the question dealing partly with calf-rearing was not as well answered at Kilmarnock as at Reading. The work of the best candidates at this centre was of a most satisfactory character.

"On the whole, the average results at both centres are again satisfactory. It is evident that thorough and careful instruction is being given in General Dairying, in Dairy Farming, and in Practical Butter-making at the different teaching centres, while the candidates who have had lengthened practical experience on well-managed dairy farms, combined with a good scientific training, did distinctly the best work. It was evidently due to this combination of training that some of the Kilmarnock candidates did so well in the examination."

5. The Examiner in Cheese-making, Mr. John Benson, in his report, states that "though the number of candidates was this year much below the average, yet the work on the whole—especially the practical part of the examination—was exceedingly good. Nearly all of the candidates passed in practical work and all had evidently been well trained. The revised regulations which have been in force for the last two years have greatly tended to increase the general efficiency of candidates. Most of them were able to vary their practice and obtain excellent results, which is essential if, later on, these candidates are placed in responsible positions where the milk, appliances and accommodation will probably be found to be entirely different to what they have been accustomed to at the dairy schools where they have been trained.

"There is not now, on the part of candidates, that slavish adhesion to any particular system which was observable a few years ago, and from which the maker of the cheese dare not depart for fear of making a mistake. Candidates now exhibit more confidence, which is no doubt due to having had practice at both the training centres and on farms where cheese is made commercially.

"There was a great improvement this year in the work of those who were selected to make Cheshire cheese. In the past it has been necessary for me to criticise unfavourably the practice of many who were called upon to make this particular cheese, but this year there was great improvement and many of the finished cheeses were particularly fine.

"In the written and oral examination the work done was good—nothing outstanding or brilliant, but a good average—probably not better than in previous years. There is not the

marked advance in the knowledge of the theory of dairying which is observable in the practical part of the subject. Probably this year this defect may be traced to the abnormal and unsettling conditions under which candidates have had to work.

"The supply and the quality of the milk this year at both centres was particularly good and the arrangements admirable."

6. Dr. J. F. Tocher reports that "the knowledge exhibited by the candidates at Reading and at Kilmarnock in the subject of Chemistry and Bacteriology was of a fairly thorough character. The candidates at Reading proved to be moderately well up in elementary chemistry and in general bacteriology. Their knowledge of chemistry and bacteriology as applied to dairying was much more extensive. The candidates had a good sound practical knowledge of the applications of chemistry and bacteriology to dairying. Considering the examination at Reading as a whole, and grading the degrees of proficiency into classes, it was found that 4 per cent. of the candidates could be classed as very good; 44 per cent. as good; 35 per cent. as fair, and 13 per cent. as passable. Some of the candidates improved their position at the *viva voce* examination, as the result of an opportunity to show their knowledge of the general principles of chemistry and of important facts in applied chemistry and bacteriology within the limits of the syllabus.

"The answers to general questions in elementary chemistry and general bacteriology given by candidates at Kilmarnock were rather poor when compared with their answers to questions on the application of chemistry and bacteriology to dairying. As a result of this, the standard of excellence at Kilmarnock was scarcely so high as that found at Reading, while there was greater variation between the best prepared and the lower grades. The answers to *viva voce* questions were on the whole quite satisfactory. The candidates at Kilmarnock fell under the following classification:—very good, 4 per cent.; good, 14 per cent.; fair, 46 per cent., and passable 21 per cent. It will thus be seen that, considering both examinations, most of the candidates exhibited a sufficient amount of knowledge to place them in a position above the ordinary pass standard."

J. MARSHALL DUGDALE,

Chairman.

16 Bedford Square, London, W.C.
October, 1915.

ANNUAL REPORT FOR 1915 OF THE PRINCIPAL OF THE ROYAL VETERINARY COLLEGE.

ANTHRAX.

THE following Table shows the number of outbreaks of this disease and the number of animals attacked during each of the last five years :-

Year		Outbreaks		Animals attacked
1911	...	907	...	1,120
1912	...	743	...	840
1913	...	594	...	652
1914	...	722	...	796
1915	...	575	...	642

The fluctuations in the incidence of the disease which are shown in the Table are not easily explained. There is no reason to doubt that the figures are trustworthy as an index to the prevalence of the disease in each of the years included in the Table, since during the period there has been no change in the law with regard to reporting or in the machinery for diagnosis. Since the beginning of 1911 no case of anthrax figures in the returns published by the Board of Agriculture and Fisheries unless the provisional diagnosis made by the veterinary inspector to the local authority has been confirmed by microscopic examination, and if necessary by experiment, at the Board's laboratory. Formerly the diagnosis made by the local veterinary inspectors was not subject to confirmation by the Board, and it is noteworthy that in 1911, the first year under the new system, there was a drop of over 500 in the number of outbreaks (1,496 in 1910).

The more accurate diagnosis ensured by the new method is of great importance to the stockowner, who is quite needlessly subjected to annoyance and loss under the provisions of the anthrax order when a case is wrongly diagnosed as one of anthrax.

The fall in the number of outbreaks in 1913 and 1915 cannot be ascribed to any climatic peculiarities in these years, for there is no reason to suppose that the frequency of outbreaks in Great Britain is influenced in any degree by variations in either rainfall or temperature.

In a minority of the outbreaks the infection may be traced back to a previous case on the same farm, but, as has been explained in previous reports, there is good reason for believing that the majority of outbreaks in this country are ascribable to the presence of anthrax spores in imported grain and feeding stuffs. It is therefore quite possible that the periodic fluctuations in the number of outbreaks in Great Britain may be

caused by variations in the quantity of such materials used for feeding cattle, or by variations in the proportion of such imported food that is actually infected with the germs of anthrax.

It will be observed that in each of the years included in the Table the number of animals attacked was very small in proportion to the number of outbreaks, and that in no year did the average number of animals attacked in each outbreak exceed one and a fraction. This is a fact which by itself controverts the popular notion that anthrax is a disease greatly to be dreaded because of its markedly contagious character. The truth is that the disease is scarcely contagious at all in the usual sense of the word, neither is it ordinarily infectious in the sense of being air-borne. It is true that an animal suffering from anthrax may infect another kept in contact with it by means of its excrement or urine, and a still greater danger attaches to the blood of an anthrax carcase, but when these dangers are obviated by proper precautions the disease has little tendency to spread.

Prompt reporting of sudden unexpected deaths among cattle is the best means of keeping down the number of cases of anthrax in each outbreak, and of preventing the lasting danger that may follow serious contamination of the soil with the blood or excretions of the first case.

GLANDERS.

The number of outbreaks of this disease in each of the last eight years is shown in the following Table:—

Year	Outbreaks	Animals attacked
1908	789	2,433
1909	533	1,753
1910	351	1,014
1911	208	501
1912	173	314
1913	162	447
1914	97	286
1915	50	87

The years included in the Table cover the period during which the existing Glanders Order has been in force, and there can be no doubt that the steady decline in the number of outbreaks is ascribable to the operation of that Order. During the previous ten years little or no progress towards the suppression of the disease had been made, and this failure was due to the fact that under the Order then in force the employment of mallein was neither general nor obligatory in order to ascertain to what extent the disease had spread in studs known to be infected. Outbreaks were considered at an end when the whole of the horses presenting clinical signs of the disease had been

killed and the stables had been disinfected. As glanders often has a long period of incubation or latency, the result was that in the majority of infected studs the disease broke out again after an interval. The principal provision of the Order which came into force on January 1, 1908 is one which virtually gives local authorities the power to enforce the use of mallein for all the apparently healthy horses in a stable in which a case of glanders has been detected, to slaughter the reacting animals, and to compensate the owner. Assuming that there was honest notification of clinical cases, this plan of dealing with the disease was bound to bring about a marked reduction in the number of outbreaks, and its actual effect can be read in the Table.

In the last annual report attention was called to a possible recrudescence of glanders in consequence of the war. Such a danger arises from the fact that in almost all the countries from which horses and mules are purchased for army purposes glanders is a not uncommon disease. In all past wars the losses from glanders among horses in the field have been very serious; and, although it is understood that in the British army the disease has been kept under thorough control by the use of mallein, there will be a great risk of fresh outbreaks when horses belonging to the Expeditionary Forces are brought back to this country. But for this factor next year would probably have seen the last of glanders in the United Kingdom.

SHEEP SCAB.

The following Table shows the number of reported outbreaks of this disease during the last six years :—

Year	Outbreaks
1910	556
1911	434
1912	302
1913	236
1914	226
1915	257

In considering the present position with regard to this disease it ought to be remembered that between 1870 and 1904 the outbreaks reported in any one year were never less than 1,000, generally at least 1,500, and in more than half the years over 2,000. As late as 1896 the number was 3,536. Having regard to this fact, it must be admitted that the regulations which have been in force against the disease have been remarkably successful, although the experience of the last two years is disappointing. This check in the process of eradication is only what might have been foreseen, for in proportion as the measures of prevention are successful the difficulty of maintaining the same rate of progress increases. The last

strongholds of the disease are the large sheep farms in Scotland, Wales, and the North of England, which present special difficulties because of the ease with which the disease may be concealed, and also because isolation of diseased and suspected animals is generally more difficult than on the lowland farms.

The figures for the last three years suggest that the existing regulations will have to be strengthened to meet these difficulties if the disease is to be actually exterminated.

SWINE FEVER.

The following Table shows the number of confirmed outbreaks of this disease during the past six years :—

Year	...	...	...	Outbreaks
1910	...	...	...	1,598
1911	...	...	...	2,466
1912	...	...	...	2,920
1913	...	...	...	2,573
1914	...	...	...	4,356
1915	...	...	...	3,994

These figures prove the absolute failure of the measures recently employed against swine fever to stamp out the disease or even to hold it in check. Those for the last two years are specially disappointing, as being the worst during the last twenty years.

In the previous annual report it was said that there appeared to be general agreement that the attempt to stamp the disease out should be frankly abandoned, and that the Board of Agriculture should, at least in the immediate future, be content with measures designed to hold it in check and mitigate the losses which it inflicts on breeders and feeders of pigs. That is substantially the conclusion arrived at by the Departmental Committee which was appointed in 1911, and which issued its final report in August last. In the words of this report "the extirpation of the disease is practicable only by such drastic measures of slaughter as would involve a prohibitive outlay, and by such severe restrictions on movement as would be fatal to the industry of pig-keeping. Present circumstances, therefore, do not encourage the view that the extirpation of swine fever can be speedily accomplished, or that such an objective should continue to be made the governing idea of administrative policy. This conclusion, however, does not exclude the possibility that new preventive methods may bring about a condition of affairs more favourable to the prospect of eradicating the disease."

In view of all the evidence laid before them the Committee recommend :—

1. That the attempt to extirpate the disease by general slaughter should be abandoned for the present.

2. That the immediate object of future policy should be:
(a) To reduce mortality from the disease; (b) to control the spread of the disease.

3. That in order to reduce mortality, the use of protective serum without avoidable delay in infected herds should be encouraged by every possible means and in particular by facilitating the supply of serum.

4. That the production of immune herds by simultaneous administration of serum and virus should be undertaken where pig owners so desire, on premises selected as suitable and under careful supervision and restrictions.

5. That in order to control the spread of the disease the isolation of infected premises should be maintained by restrictive regulations, but that such restrictions should allow of the introduction to infected premises of pigs to be treated immediately with serum.

6. That careful consideration should be given in the light of further experience to the extent to which existing general restrictions on movement may be relaxed as the result of new measures.

7. That in view of the experimental results above referred to the lapse of a short period of time may be relied upon for disinfection of premises, and should be regarded as preferable to chemical disinfection in the case of large quantities of manure and of premises not readily capable of being disinfected by artificial means.

Great weight must be allowed to these recommendations in view of the fact that they are based on a careful study of the repressive measures hitherto enforced against the disease, and on the results of extensive experiments carried out at the instigation of the Committee during the past four years. Perhaps they also derive importance from the fact that they represent an abandonment of the position taken up by the Committee in their interim report issued in 1911. The first of the recommendations in that report was that "in order to extirpate swine fever the policy should be adopted as rapidly as possible under which all swine known to have been, or reasonably suspected of having been, exposed to the contagion of swine fever, should be slaughtered, with compensation."

The change of opinion as to the wisdom of this policy was no doubt largely determined by the failure of "special procedure" in selected areas in Scotland and Wales to achieve the desired result. Regarding the attempt to eradicate the disease from these areas, the report states that in the special procedure areas in which swine fever had previously been brought to a low ebb the special measures employed appeared to have been successful in keeping down the number of outbreaks of disease

at a time when these underwent a large increase in other parts of Great Britain. In the opinion of the Committee, however, the results were not such as to indicate that swine fever could be eradicated by the special procedure from the areas selected unless all pigs from other areas were excluded from them.

As the measures enforced in the special procedure areas would not have been tolerated over the entire country, the policy of stamping out appeared to be impracticable, and the report announces that it has been abandoned for the present. Indications of this change of policy have been detectable in the returns of outbreaks during the past year, since these show that there has been a 50 per cent. reduction in the average number of pigs slaughtered as diseased or exposed to contagion in each outbreak.

In the meantime the Board of Agriculture is committed to a policy which substitutes a gratuitous supply of protective serum with which to inoculate pigs that have been exposed to contagion, for slaughter of such pigs with compensation. Assuming that stamping-out measures are economically impossible, and unbearable by pig owners, the new policy is not open to any attack from a national point of view. But under it the owner of pigs among which the disease has broken out will, as a rule, suffer more loss than under the system of compulsory slaughter with compensation.

It is important to note that the use of serum in no degree diminishes the necessity for restrictions on movement of diseased and suspected swine, which must be continued in the interests of the immense majority of owners, viz., those whose pigs are not affected with swine fever.

The advantages of the serum treatment were explained in a previous annual report,¹ and it is only necessary to say in conclusion that in order to secure the full benefit of the treatment early notification of the disease is of the first importance. Now that compulsory slaughter with compensation has been abandoned, concealment of the disease until it has attacked a large proportion of the pigs is certain to prove a ruinous policy, since the action of the serum is preventive—not curative.

FOOT-AND-MOUTH DISEASE.

During the third week of October this disease was detected in the counties of Somerset and Wilts, and between that date and the 18th December a total of 65 outbreaks, in which 693 animals were attacked, were confirmed. With the exception of one outbreak in Pembroke, the disease was confined to the two counties in which it was first detected. The origin of the first outbreaks was not ascertained.

¹ See Annual Report for 1913.

DIFFERENT METHODS OF TESTING WITH TUBERCULIN.

There has been for a good many years past little difference of opinion regarding the value of tuberculin as ordinarily employed for the diagnosis of tuberculosis, it being generally acknowledged by those who have had extensive experience in the application of the test that, although it is not infallible, the indications which it affords are accurate except in a very small percentage of cases.

The fact, however, that, even when every possible precaution calculated to exclude error is adopted in carrying out the ordinary subcutaneous test, errors of diagnosis are possible, has

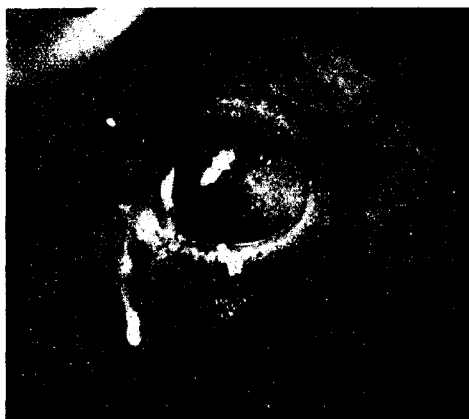


FIG. 1—Conjunctival reaction at sixth hour.

led to the adoption of other methods of employing tuberculin in order to determine whether an animal is tuberculous or not.

The two most important of these modifications of the test are (1) the conjunctival, ophthalmic, or eye test, and (2) the intracutaneous test.

Experiments which have recently been carried out at the Royal Veterinary College¹ afford evidence as to the value of these newer methods of testing in comparison with the old.

For the most part the observations were made on young cattle which were first ascertained to be healthy by means of preliminary tests with tuberculin, and which were then

¹ McFadyean and Sheather, *Journal of Comparative Pathology and Therapeutics*, Vol. XXVII., page 323.

intentionally and certainly infected with the disease by introducing artificially cultivated tubercle bacilli into their bodies by intravenous or subcutaneous inoculation. At intervals after such infection the animals were tested either simultaneously or successively by the subcutaneous, conjunctival, and intracutaneous methods.

Experiments carried out in this way have obviously an advantage over observations made in the case of actual practice, in that there can be no dispute as to whether the animal tested was actually tuberculous or not, and this is a point of special importance in those cases in which the tuberculin test



FIG. 2.—Conjunctival reaction at eighth hour.

has had a result which is ordinarily accepted as evidence that the animal in question is not affected with tuberculosis.

The method of carrying out the ordinary subcutaneous test with tuberculin is so well known that there is no occasion to describe it here. On the other hand, it is necessary to explain the manner in which the other two tests are carried out.

In the first place, it must be stated that a special concentrated tuberculin, free from any preservative, is usually employed and generally considered to be necessary for the conjunctival and intracutaneous tests. In the case of the conjunctival test a few drops of this special tuberculin are introduced into one of the animal's eyes. That is conveniently done by inclining the animal's head so as to direct the selected eye upwards, and the proper dose of tuberculin is

then allowed to fall on the eyeball. The animal's head is held in the same position for a few moments, until the winking movements of the eyelids have distributed the tuberculin over the eyeball and inner surface of the lids.

At intervals during the following twenty-four hours the tested eye is carefully compared with the other one, and any abnormalities are noted. The occurrence of congestion or a manifest overflow of tears, and the formation of a considerable amount of more or less opaque muco-purulent material in the eye are to be interpreted as a certain indication that the animal in question is tuberculous. The complete



FIG. 3.—Conjunctival reaction at twenty-fifth hour.

absence of these abnormalities is, on the other hand, to be noted as non-reaction.

In the intracutaneous test the tuberculin is injected into either of the two thin double folds of skin which are seen extending from the root of the tail on either side of the animal's anus when the tail is elevated. What constitutes a reaction here is a more or less pronounced swelling and thickening of this fold, the degree of thickening being readily ascertained by comparison with the opposite fold. In distinct reactions the thickening is manifest to the eye even at a considerable distance, but one has also to grasp the folds between the thumb and fingers in order to ascertain their relative thickness.

As a rule there is an appreciable thickening of the inoculated fold round the point where the tuberculin was injected whether the animal is tuberculous or not, but what is specially characteristic of a genuine reaction is that the swelling continues to increase from its first appearance until the second day or even later (see figures).

In the experiments which were carried out at the Royal Veterinary College some of the animals tested had previously been infected with tubercle bacilli of the human or of the avian type, but the chief interest attaches to the tests which were applied to animals infected with ordinary bovine tuberculosis.



FIG. 4.—Reaction to intracutaneous test at twenty-seventh hour.

The result proved extraordinarily accurate in the case of the subcutaneous test, but, while striking reactions were obtained with each of the other two methods of testing, the failures with them were far more numerous than with the first method.

Out of a total of fifty animals tested for the first time after subcutaneous inoculation with bovine tubercle bacilli, forty-seven had a positive reaction (a rise of 2° F. or more) and in the remaining three cases the temperature was already distinctly above the normal (over 103.5° F.) before the tuberculin was injected. These three cases cannot be regarded as instances of failure on the part of the test, for it is generally recognised

that animals with such temperatures to begin with are unsuitable for the subcutaneous test.

Including animals tested for the first time after infection with human or avian tubercle bacilli, but excluding those in which the temperature was already too high, the total number of first subcutaneous tests was 122, and in only seven of these was the rise of temperature less than 2°. Moreover, it is important to note that five of these failures were in animals infected with avian tubercle bacilli and tested with tuberculin prepared from mammalian bacilli (so-called heterologous tuberculin).



FIG. 5.—Reaction to intracutaneous test at twenty-ninth hour.

A total of 157 conjunctival tests were carried out on animals experimentally infected with tuberculosis, and in 77 of these cases there was no reaction whatever. This statement, however, hardly indicates the inferior results obtained by this method as compared with the ordinary subcutaneous test, for in 29 cases the reaction which did occur fell far behind what is shown in any of the accompanying figures, and took the form of a small particle of mucus present at one period of observation only.

The intracutaneous test had fewer failures than the conjunctival but more than the subcutaneous. Thus, accepting as "positive" the degree of swelling which made the inoculated fold of skin at least twice the normal thickness up to fifteen hours

or later, out of 124 intracutaneous tests of certainly infected animals 87, or 70 per cent., had a positive result.

It would be a great mistake to conclude from the facts which have just been mentioned that the conjunctival and intracutaneous methods are of little or no value for the diagnosis of tuberculosis because they have been proved less reliable than the old subcutaneous method. On the contrary, the two new methods are capable of affording very great service in actual practice, and they are likely to come into general use in the future.

As already indicated, the proportion of errors may be very great when either the conjunctival or the intracutaneous



FIG. 6. Reaction to intracutaneous test at thirty-second hour.

method is employed by itself—much greater as a rule than when one trusts entirely to the subcutaneous test. It must be remembered, however, that there are circumstances in which it is absolutely useless to employ the last test, or which greatly increase the risk of error in using it. The subcutaneous method is useless when the animal to be tested has a temperature already decidedly above the normal, and it is untrustworthy when it has to be carried out in conditions that tend to make the temperature erratic. The proportion of errors from the subcutaneous test may therefore be very serious if one attempts to carry it out with field animals that have only been housed for the purpose of the test, or with animals that have recently been moved from their accustomed

surroundings. In these circumstances the temperature of the animals is often for days, or even for weeks, subject to considerable fluctuations, which may include elevations that would be indistinguishable from genuine reactions in animals being tested.

The best way of avoiding the errors likely to arise in this way is to refrain from testing in the conditions mentioned, and to wait until trial observations have shown that the temperature has become steady; but when the test cannot be delayed the conjunctival and the intracutaneous methods should be employed at the same time.

The circumstances which have just been considered are those in which the principal risk of error is that the animal may be wrongly condemned as tuberculous, but some of the errors of the subcutaneous test are of the opposite kind, there being no distinct temperature reaction although the animal is actually tuberculous. Judgment as to which of these errors is the greater may depend on the particular point of view—that of buyer or of seller; but there can be no doubt that when an owner is having his own cattle tested with a view to eradicating the disease from his herd it is the errors of the second kind that have the worst consequences. It is here that the new methods of testing are likely to prove of great value in the future, for, although they are less reliable than the subcutaneous method when employed separately, they sometimes provoke very distinct reactions in tuberculous animals in which the result of the subcutaneous test has been doubtful or absolutely negative. And in this connection it is important to know that distinct reactions to either the conjunctival or the intracutaneous test may be accepted as almost conclusive evidence that the animal is tuberculous. In other words, the errors of these methods are practically all in the direction of failing to cause a distinct reaction in animals that are tuberculous, and seldom or never in the opposite direction. The conjunctival and intracutaneous methods are also valuable because they may be used to counteract the dishonest practice of giving an animal repeated injections of tuberculin in order to bring it into the condition in which it will not react to the subcutaneous test. Very fortunately, the tendency to react to the other two methods, and especially to the conjunctival method, cannot be so easily abolished, and very pronounced reactions may be obtained with either or both of them in animals that have temporarily lost the power of reaction to the subcutaneous test.

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ANNUAL REPORT FOR 1915 OF THE CONSULTING CHEMIST.

THE number of samples analysed in the Society's Laboratory on behalf of Members was, during the twelve months, 300. This is a considerable reduction on the 436 samples of 1914, which then showed a slight increase on the figures for 1913.

In addition, 199 samples of milk and 12 samples of cider were analysed in connection with the Society's Country Show at Nottingham.

The reduction in the number of samples sent was, no doubt, influenced much by the prevalent desire for economy, though it cannot be said that farmers, any more than other people, always practise economy in the right direction.

With the great rise in prices for both fertilisers and feeding-stuffs, one would think that purchasers would be even more careful to see that they got their full value, and, though it must be remembered that the facilities for obtaining analyses have, of late years, been largely increased, it is yet somewhat remarkable that with linseed cake at 12*l.* a ton, cotton cake at 9*l.* a ton, sulphate of ammonia and nitrate of soda at 14*l.* 10*s.* per ton or thereabouts, only 5 samples of linseed cake, 7 of cotton cake, 4 of sulphate of ammonia, and not a single one of nitrate of soda have been sent during the year by the 10,000 odd Members of the Society. This is the more remarkable as, though the work of the year has shown the quality of agricultural goods generally to have been very satisfactory, cases still continue to be brought to light which show the need of constant vigilance and how money can be saved by having deliveries systematically checked by analysis.

No particular, or new, form of adulteration has come to light during the year, and it is satisfactory to record that the quality of offals—to which special attention was drawn in last year's report—has much improved.

The feature of the year has been the great rise in prices of both fertilisers and feeding-stuffs, more especially the latter. The increased cost of freight has been mainly responsible for this.

As showing the increase of cost since the war began, linseed cake, which was 9*l.* per ton in 1914, has risen to 12*l.* and 13*l.*; cotton cake, formerly 5*l.* 15*s.* or 6*l.* a ton, has gone up to 9*l.*, while decorticated cotton cake, ground nut cake, soya bean cake and similar cakes have all become much dearer. The same applies to wheat offals, rice meal and other feeding materials. This has given a great opportunity to the extended use of palm-nut cake and meal and of coco-nut cake, which, by virtue of the lower prices (7*l.* to 8*l.* per ton) at which they have been offered, have had a largely increased sale.

Owing to the heavy requirements of the Government for sulphuric acid for the manufacture of explosives, artificial manure makers have been placed in considerable difficulty with regard to the manufacture of superphosphates, &c., and the execution of orders for these manures.

Moreover, the Government has thought it necessary to purchase supplies of nitrate of soda and to requisition stocks of sulphate of ammonia for agricultural use.

The dearth of potash salts continues, none of these being exported from Germany to this country. Little or nothing has been heard of new supplies from Spain and elsewhere, and the means suggested for meeting the deficiency by the reviving of the Kelp-burning industry, the burning of hedge-clippings, &c., have, as I expected, not reached any practical importance.

The problem of the economical separation of potash in the form of soluble salts from minerals containing potash is one of the greatest importance, and demands immediate investigation. Meantime, agriculturists have had, practically, to do without potash this year.

Of industries, the one for which a fair opening seems to offer—the Beet-Sugar Industry—has not made much real progress, the unfortunate example of the Cantley (Norfolk) factory no doubt acting as a deterring influence, and preventing the further outlay of money by the Government in encouraging this industry, though it is worthy of note that they continue to subsidise the tobacco-growing industry in these islands. As I have more than once pointed out, I believe that the present would be a most opportune time for reviving the sugar-beet industry in this country, if this were established under proper conditions, especially when one bears in mind the agricultural prosperity that has followed it wherever it has been introduced on the Continent. If the present opportunity, however, be lost, it is no use thinking of it in the future, and I still consider that the subject is one to which serious attention should be turned, and to which the Government should give encouragement.

A. FEEDING STUFFS.

1. *Linseed and Linseed Cakes.*

All the five samples of linseed cake submitted were found to be pure and good.

Two samples of home-grown linseed which were sent to me gave :—

Percentage of :—

	1	2
Oil	40.03	41.55
Impurities	2.25	4.16

The impurities, in each case, consisted of weed-seeds, mostly charlock and polygonum, with earthy matter.

2. Cotton Cake.

A sample was sent me of what was stated to be a "new brand" of cotton seed cake. It cost, in February, 1915, 6l. 15s. a ton, and was guaranteed to contain 4 per cent. of oil and 18 per cent. of albuminoids. The analysis was:—

Moisture	10.81
Oil	3.93
¹ Albuminoids	18.62
Carbohydrates, &c.	62.61
² Mineral matter.	4.03
	<hr/> 100.00
¹ Containing nitrogen	2.98
² Including sand . . . . .	.10

The above showed the cake to be of extremely poor quality, it being considerably below the average in respect of both oil and albuminoids. Moreover, it was distinctly acid and in bad condition.

3. Decorticated Cotton Cake.

	A	B
Moisture	9.03	8.44
Oil	15.41	13.45
¹ Albuminoids	33.56	40.75
Carbohydrates, &c.	35.56	30.12
² Mineral matter	6.44	7.24
	<hr/> 100.00	<hr/> 100.00
¹ Containing nitrogen	5.37	6.52
² Including sand . . . . .	.10	.14

"A" was said to be Peruvian decorticated cotton cake. Although it gave a good percentage of oil, it was only semi-decorticated, and, moreover, I found in it a small amount of castor-oil bean. "B" was of fresh and good quality.

4. Palm-nut Cake and Meal.

Several samples of these have been received. In my last annual report I gave analyses of samples of palm-nut cake and meal which showed considerable variations in quality. These same variations have continued, and it is impossible to say what the general composition is. Moreover, palm-nut meal sometimes has the oil chemically extracted, and the percentage of oil left in it may be very variable, going down to 2 per cent., or even less. I have met also with a material sold under the name of "pig meal," which was practically nothing more than palm-nut meal.

Though palm-nut cake, on account of its lower price, has been much more freely used than previously, it is questionable whether it is a thoroughly acceptable food for all stock, and I have met with several cases in which difficulties have been experienced in getting stock to take to it. I might say, however, that I have come across but few instances, either with palm-nut cake or meal, in which these have been rancid or not in good condition.

5. *Coco-nut Cake.*

The following are analyses of two unusually rich samples :—

	A	B
Moisture	10.73	9.34
Oil	15.34	22.34
¹ Albuminoids	20.56	18.50
Carbohydrates, &c.	37.05	45.18
Woody Fibre	10.18	
² Mineral matter	6.14	4.64
	100.00	100.00
¹ Containing nitrogen	3.29	2.96
² Including sand	1.44	.19

6. *Rice Meal and Rice Cake.*

	A Rice Meal	B Rice Cake
Moisture	9.78	9.93
Oil	15.03	4.15
¹ Albuminoids	12.44	7.13
Carbohydrates, &c.	49.87	73.75
Woody fibre	4.75	
² Mineral matter	8.13	5.04
	100.00	100.00
¹ Containing nitrogen	1.99	1.14
² Including sand and silica	1.69	1.24

"A" was a very good sample and well above the guarantee of 11 per cent. of oil. The price was 6*l.* 10*s.* per ton delivered.

"B" was called "rice cake." It was a poor material and distinctly acid in character.

7. *Oat Refuse.*

	A	B
Moisture	6.77	—
Oil	1.09	.86
¹ Albuminoids	3.56	1.06
Digestible fibre, &c.	51.87	—
Woody fibre	32.43	—
² Mineral matter	4.28	4.54
	100.00	
¹ Containing nitrogen . . . . .	.57	.17
² Including silica	2.99	3.49

"A" was called "oat siftings" and cost 3*l.* 12*s.* 6*d.* per ton. It was a waste material and worth nothing like the price asked.

"B" was sold as "Oat Feed," at 5*l.* 5*s.* per ton. The purchaser complained that his cows, pigs, and poultry would not eat it. It was sold with a verbal guarantee of containing 5 per cent. of oil. It was nothing but oat refuse, and should not be regarded as a feeding material at all.

8. Pig Meal.

Under this name were sold the following:—

	A	B
Moisture	13.71	8.64
Oil	6.15	3.85
¹ Albuminoids	22.38	22.56
Carbohydrates, &c.	39.54	20.24
Woody Fibre	13.44	8.07
² Mineral matter	4.78	36.64
	100.00	100.00
¹ Containing nitrogen	3.58	3.61
² Including sand.	1.00	30.13

"A" cost 6*l.* 5*s.* per ton, and was practically nothing but palm-nut meal. It is questionable, however, whether this is a food that is suitable for pigs, for it contains a not inconsiderable amount of indigestible woody fibre.

"B" cost 7*l.* per ton. It contained, as will be seen, over 30 per cent. of siliceous matter and dust, and was nothing more than sweepings, and not fit to be used as a food for stock.

9. Miscellaneous Feeding Materials.

	A Feeding Meal	B Patent Bran	C Red Clover Seed Shellings	D Sainfoin Shellings
Moisture	6.48	9.74	11.72	12.36
Oil	5.02	3.56	8.12	1.26
¹ Albuminoids	12.62	10.44	19.75	6.25
Carbohydrates	33.59	39.09	45.47	38.66
Woody fibre	31.33	28.18	10.55	34.94
² Mineral matter	10.96	8.99	4.39	6.53
	100.00	100.00	100.00	100.00
¹ Containing nitrogen	2.02	1.67	3.16	1.00
² Including sand	2.24	1.24	.29	.05

"A" was called "Feeding Meal," and cost 5*l.* a ton. It was a waste material composed entirely of the shelling of seeds and containing much indigestible matter.

"B" was called "Patent Bran," costing 6*l.* a ton. In composition and general character it was not unlike "A," being apparently the shellings of cotton seed. The use of the term "bran" for such material is, without question, improper.

"C" gave quite a good analysis, and I see no reason why it should not, when available, be used for stock.

"D" had about the same value as wheat straw, but was probably a material that would not be as readily assimilated.

B. FERTILISERS.

1. *Compound Manures.*

It is with the varying class of manures sold under the name "Compound Manures" that cases of over-charge are most frequent. The following are illustrations :—

	A Compound Manure	B Compound Fish Guano	C Horse-Slaughters' Guano
Moisture	28·01	16·67	17·05
Organic matter	38·58	29·69	29·42
Phosphate of Lime . . .	7·21	8·41	10·34
Carbonate of Lime, &c. .	8·47	23·24	24·13
Insoluble siliceous matter	17·73	21·99	19·06
	<hr/> 100·00	<hr/> 100·00	<hr/> 100·00
Containing nitrogen . .	2·33	1·62	2·21
equal to ammonia . . .	2·83	1·96	2·68

"A" cost 4*l.* per ton, but 50*s.* would be ample for it.

"B" cost 3*l.* 15*s.* per ton, and was decidedly dear. Moreover, "fish guano" was not a proper description of it, the nitrogen being derived mainly from shoddy. It came from Hull.

"C" cost 3*l.* per ton at the works. Its condition was good, but it was dear at the price.

2. *Sulphate of Ammonia.*

It is not often that this fertiliser is found to be inferior, but the following is a case in point. The purchase was in Kent. The sample was very acid and of inferior quality.

Moisture	3·07
Free acid	4·22
Ash	·60
Pure sulphate of ammonia	92·11
	<hr/> 100·00
Containing nitrogen	19·46
equal to ammonia	23·63

3. Soot.

A very good sample was the following, costing 3*l.* per ton in E. Yorks, and being well worth the money.

Moisture	13.23
Organic matter and salts of ammonia	63.35
Oxide of iron, &c.	11.34
Sand	12.08
	<hr/>
	100.00
Containing nitrogen	4.40
equal to ammonia	5.34

4. (a) Shoddy, (b) Felt Trimmings, (c) Fleece Combing.

(a) A sample of shoddy, guaranteed to contain 6 per cent. of ammonia and costing 50*s.* 6*d.* per ton, gave on analysis:—

Nitrogen	3.38 per cent.
Equal to ammonia	4.10 "
Sand	35.14 "

This was dirty and much below the guarantee.

(b) Under the name "felt trimmings" was sent to me a sackful of material which consisted of large pieces of felt (an entire felt hat was found in it). It was very wet, and from the nature of the material would take long to decompose in the soil. The analysis was:—

Moisture	52.50 per cent.
Nitrogen	5.20 "
Equal to ammonia	6.31 "

This cost no less than 7*l.* per ton, a price which, considering the state of the material, was altogether out of the question.

(c) A sample of "fleece combings" gave:—

Moisture	7.73
Organic matter	45.78
Oxide of iron, lime, &c.	7.54
Siliceous matter	38.95
	<hr/>
	100.00
Containing nitrogen	1.86
Equal to ammonia	2.26

5. Poultry Manure.

The principal difficulties in purchasing this material are to have it in dry, friable condition, and to avoid admixture with earth. An excellent sample, however, was sent me, this being about the best I have ever come across. It consisted of the pure droppings of the birds, collected and stored under cover.

Moisture	22.41
¹ Organic matter and salts of ammonia	52.12
Lime	3.74
² Phosphoric acid	3.62
³ Alkalies, &c.	6.71
Insoluble siliceous matter	11.40
	<hr/>
	100.00
	<hr/>
¹ Containing nitrogen	5.03
equal to ammonia	6.11
² Equal to phosphate of lime	7.91
³ Containing potash	2.03

This was sold at 30s. a ton, and, considering its excellent condition and freedom from extraneous matter, earth, &c., was worth a good deal more than the price asked for it.

6. *Lawn Fertilisers.*

These materials are frequently sold at prices altogether beyond their value. One such was the following, which cost 17*l.* 10s. per ton, its real value being not more than 4*l.* per ton.

Moisture	4.39
¹ Organic matter and ammonia salts	19.35
² Phosphoric acid . . . . .	.69
Lime	3.68
Oxide of iron and alumina	3.64
Magnesia . . . . .	.20
Potash . . . . .	.21
Soda . . . . .	.53
Sulphuric acid, &c.	5.19
Insoluble siliceous matter	62.12
	<hr/>
	100.00
	<hr/>
¹ Containing nitrogen	3.38
equal to ammonia	4.10
² Equal to tribasic phosphate of lime	1.50

7. *Tannery Refuse.*

A sample of this gave :—

Moisture	49.46
Lime	28.72
¹ Organic matter, &c.	19.89
Insoluble siliceous matter	1.93
	<hr/>
	100.00
	<hr/>
¹ Containing nitrogen . . . . .	.39
equal to ammonia . . . . .	.47

Though smelling of ammonia, there was but little present, and the material, which consisted of lime with hair in it, was a wet mass which it would be difficult to use direct on the land.

8. Ashes of Horse and Mule Droppings, Peat, &c.

In the search for something to supply potash to the soil in the absence of the imported potash salts, a number of materials have been tried, these consisting mainly of ashes of one kind or another. Among them have been the ashes left after burning the droppings of horses, mules, &c., at the numerous military camps over the country.

	A	B	C	D
	Burnt Horse Manure	Burnt Horse Manure after washing by rain	Burnt Mule droppings	Burnt ashes
Moisture . . .	69	11.51	1.34	3.49
Organic matter . .	4.15	4.02	4.04	29.62
Phosphoric acid . .	5.83	2.86	1.78	—
Oxide of iron and alumina . . .	5.25	5.06	7.24	19.30
Lime . . .	12.31	10.09	.95	14.69
Potash . . .	8.54	1.24	1.94	.58
Soda . . .	3.11	1.56	.45	—
Magnesia, carbonic acid, &c. . .	7.06	3.58	3.70	19.61
Insoluble siliceous matter . . .	53.06	60.08	79.56	12.61
	100.00	100.00	100.00	100.00
¹ Equal to phosphate of lime . . .	12.74	6.25	3.89	—

"A" was from fresh heaps of burnt horse-manure, "B" from the same heaps after exposure to rain; "C" came from the burnt droppings of army mules, while "D" consisted of the ashes obtained from burning peat.

It will be noted that "A" was very rich in potash, but that "B" had suffered much through the washing. "C" contained much more earthy matter than the two former, while "D" had only a very moderate quantity of potash.

C. MISCELLANEOUS.

Soils.

(a) Soil deficient in lime.

(b) Soil with magnesia in excess.

(a) Of this soil (which came from the neighbourhood of Derby) it was complained that the grass died away in patches. On the surface was a quantity of coarse grass, and below this a

"matting," nearly 1 in. in depth, of roots—presenting the appearance that betokens the need of liming. I was not surprised, therefore, to find this conclusion confirmed by the analysis, which gave :—

Organic matter and loss on heating	6.74
Oxide of iron and alumina	6.74
Lime	10
Phosphoric acid	14
Alkalies, magnesia, &c.	77
Insoluble silicates and sand	85.51

100.00

(b) I give the following as another example of what I have of late years frequently commented on, viz., that soils in which the amount of magnesia present is largely in excess of the lime are frequently unproductive or unsatisfactory. In the present case I was informed that the soil (which came from near Redditch) would not grow any appreciable quantity of grass and that stock would not graze it if they could help it. The analysis was :—

Organic matter and loss on heating	9.47
Oxide of iron	4.52
Alumina	6.72
Lime	79
Magnesia	1.69
Potash	1.25
Soda	2.31
Phosphoric acid	11
Sulphuric acid	14
Insoluble silicates and sand	73.00

100.00

Nitrogen 3.39

The soil was a red marl, and while, ordinarily speaking, it might be thought to have lime in sufficiency, the lime was so overweighted by the excess of magnesia that recourse should be had to further liming.

The following is a list of the samples submitted by Members of the Society during the twelve months, December 1, 1914, to November 30, 1915 :—

Linseed	8
Linseed cakes	5
Undecorticated cotton cakes	7
Decorticated cotton cakes	10
Compound feeding cakes and meals	51
Cereals	14
Rice Meal	6
Dried grains	3

Superphosphate	10
Dissolved bones	1
Compound manures	9
Raw and steamed bones	7
Peruvian guano	5
Fish, meat, and bone guanos	4
Basic slag	10
Sulphate of ammonia	4
Shoddy	44
Refuse materials	9
Sewage sludge	2
Lime	5
Soot	1
Waters	40
Soils	16
Milk, cream, and butter	21
Miscellaneous	8
Total	300

J. AUGUSTUS VOELCKER.

1 Tudor Street, E.C.
December, 1915.

ANNUAL REPORT FOR 1915 OF THE BOTANIST.

DETERMINATIONS were made of the purity and germinating capacity of 198 samples of seeds. The number is approximately the same as that of the previous season (218), but there was a marked difference in the character of the seeds tested. Relatively few of the more permanent grasses were sent in for examination, but a considerable increase in the number of samples of wheat, barley, and especially of oats practically made up for the deficiency. These accounted for almost one-third of the total, namely for 62, whereas in the previous year there were only 32 or roughly one-seventh of the total number.

The seeds examined proved to be better than a knowledge of the difficulties seedsmen were experiencing in obtaining supplies from abroad led one to anticipate. The germination, particularly of home-grown stocks of clovers and rye grass, was exceptionally good, while the purity, if not in some cases quite up to the average of former years, was still satisfactory. In several cases indeed the "real value" of clovers and rye grasses (*i.e.*, the percentage of purity multiplied by the percentage of germinable seeds and divided by 100) was between 98 and 99.

Out of the whole series there were only five samples reported on adversely. Two of these were white clover containing

dodder seeds, one broad red clover containing Chilean dodder, one a low grade sample of perennial rye grass worth about one-half the price asked for it, and one of milled sainfoin with a germinating capacity below 50 per cent.

The cereals examined were, for the most part, home grown, and did not reach quite the same standard of purity as the highly cleaned grain supplied by the seedsmen. But for resowing they were satisfactory even where an extra seed allowance per acre had to be used to make up for deficiencies in germination.

In the course of the year 65 identifications of plants, including weeds, grasses and cereals, were made. The dyer's green weed was sent in on six occasions from the south and the west of the country. This weed occasionally establishes itself in pastures, and as stock refuse to graze on it it seeds freely, and consequently if the conditions for its growth are favourable it may cover considerable areas. No methods are known for its extermination except the tedious one of forking out the deeply rooted plants. Experiments are being made to determine whether any of the commonly used artificial manures will check its spread.

Yarrow appears to have been unusually prevalent in the past season. In one case reported to me it was so abundant that it had practically crowded out the grasses, and the only method of dealing with it appeared to be to break up the pasture. In other cases there was a probability that taking a hay crop for one or two seasons would check the plants sufficiently to allow the grasses to compete with them more satisfactorily and so prevent the pastures from being completely over-run.

The creeping buttercup, a troublesome weed of both grass and arable land, especially on heavy soils, has been practically eliminated in one case by the application of two dressings of sulphate of ammonia at the rate of three-quarters of a hundred-weight per acre. Experiments are also being tried on the small scale with the object of destroying this weed by spraying with very dilute solutions of an arsenical weed-killer. The method has been used with satisfactory results on a very badly infested lawn.

Inquiries with regard to the destruction of moss in damp pastures were made on two occasions. Draining could not be carried out in either case, so as a temporary measure superphosphate of lime was applied at the rate of two hundred-weights per acre. This has caused the almost complete destruction of the moss, but it is unlikely that the cure will be a permanent one whilst conditions favourable for its growth remain.

The common wayside weed *bartsia*, which is partially parasitic on the roots of grasses, was reported on one occasion to be so abundant in a field of lucerne that it had more or less ruined the crop.

The number of fungoid diseases of plants (42) reported on was very similar to that in the former year. The chief diseases were as follows :—

- On potatoes : "Curl," potato disease, wet-rot of the tubers, and a spot disease of the foliage.
- On roots : A bacterial disease of mangold seedlings, rust on the foliage of mangolds, and finger and toe in swedes.
- On cereals : Mildew on oats, blindness in barley and wheat, bunt in wheat, and a disease causing the breaking of the straw about ground level.
- On clovers : Sickness of lucerne.
- On fruits : Mildews of apple, peach and gooseberry, scab on pears, apple canker, and silver leaf in plums.
- On garden crops : Finger and toe in cabbage, mildews on vegetable marrow and parsnips, botrytis on lettuce, and various diseases of minor importance on ornamental plants.

The majority of the diseases are well known, but two, of which short descriptions are given below, are not so frequently met with.

Leptosphaeria culmifraga. Several times in the course of the past three seasons specimens of an obscure disease of wheat, characterised by a peculiar brittleness of the straw, have been sent in for examination. The material was never adequate for the purpose, and the cause of the disease remained untraced. Just before harvest this year another inquiry accompanied by an abundant supply of good specimens was received, and the disease was traced to the fungus *Leptosphaeria culmifraga*.

The attacked plants generally become discoloured and usually either brown or black towards the base of the stem. This symptom is particularly marked if the dead leaf-sheaths are stripped off. These discoloured areas are permeated with the mycelium of the fungus. They form weak places in the stems which readily break in rough weather, but even if the stem remains standing it usually fails to form any grain. Unfortunately the presence of the disease is not likely to be detected until it is too late for curative measures to be adopted.

It is doubtful whether it is widely prevalent in this country at present, but it is well known on the Continent, and said to be serious in some seasons.

Sporidesmium solani varians appears to be fairly common on early potatoes. The following symptoms were noted in a

crop of May Queen at the stage when the haulm had reached practically its full growth. The tips of the leaves turn brown and dry up, and on the discoloured portions minute olive-coloured patches of fungus spores are produced. These dry, dead areas may extend over the whole of the foliage with the result that the plant is so crippled that it fails to produce a normal crop of tubers. In the case under observation a single spraying with Bordeaux mixture checked the spread of the disease at once, and a comparatively good yield of tubers was obtained.

General inquiries (140) were again more numerous than in former years, and they covered a very wide range. An article in the *Journal of the Board of Agriculture* calling attention to the shortage of drugs and giving information on the methods of cultivating the commoner drug plants led to a considerable amount of correspondence. Several Members proposed to take up the cultivation of such plants as foxglove, henbane, monkshood, &c., but difficulty was met with in obtaining supplies of seed. This was ultimately overcome, and several sowings have, I understand, been made.

An inquiry of some interest was made late in the season with regard to the "sporting" of swedes. Some two or three per cent. of the plants, distributed irregularly over the field, had failed to form bulbs, and had all the appearance of rape. In the same week attention was called to the same phenomenon from two outside sources, so that possibly it has been fairly general this season. The usual explanation is that rape seed has become mixed with the swede seed, but there are good reasons for believing that this will not hold in any of these cases. Examples of the "rogues" have been obtained from all three sources together with a supply of the original seed sown, and it is hoped that the investigation now in progress will throw some light on the subject.

The problem of increasing the home-grown supplies of food-stuffs led to many inquiries on such subjects as the suitability of certain varieties of wheat for spring sowing and of various crops for freshly broken land, whilst on a smaller scale there were inquiries with regard to more intensive cultivation of garden space. In view of the importance the spring wheat crop has assumed, a special study of it has been made during the past season, the results of which are published on page 37 of the current number.

The prevention of losses through the attacks of various parasitic fungi by the employment of fungicides has been the subject of more inquiries than usual, and methods for the preparation of the more important washes have been described where necessary.

Another marked feature of the year's work has been the lack of inquiries with regard to mixtures of seeds for the formation of permanent grass land and the fewness of the cases where mixtures for the renovation of sown pastures were required.

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ANNUAL REPORT FOR 1915 OF THE ZOOLOGIST.

THE number of applications has fallen off somewhat during the past year, but the range covered by them has been extremely wide. There is little new to report concerning most of the pests complained of, and they are merely mentioned under the various sections to afford a record of the year's pests as indicated by the inquiries received. The most important agricultural pest which had previously received little attention was undoubtedly the sainfoin midge, which has been remarkably wide-spread and injurious, and will probably have a marked effect on the seed harvest of that crop. Not the least part of the work of the department has been subsidiary to the medical and sanitary investigations arising out of the war, numerous specimens of parasites and other insects having been sent for identification.

FOREST TREE PESTS.

These have comprised various bark beetles—especially those of the elm and ash—and other timber borers such as wood wasps and goat moth. Among those injuring dry timber the longicorn *Callidium variabile* has been noticeable. Inquiries have been received about pine beetle, the two larch moths and various aphidae, concerning one of which—*Lachnus piceae*—a note is appended under the head of "Wasps." Professor Somerville, of Oxford, sends me word of a new pest attacking the lower part of the trunks of old Scots' pine, a tortricid moth, *Stigmonota coniferana*, the caterpillar of which bores into the bark. No young trees have yet been observed to be attacked, and it is quite possible that the insect does no serious harm.

FRUIT PESTS.

The following fruit pests were reported:—On apple, the apple-sucker, codlin moth, apple saw-fly, goat moth, winter moth, and woolly aphis; on pear, slug worm, blister mite, and leopard moth; on plums, various species of aphids; and

then allowed to fall on the eyeball. The animal's head is held in the same position for a few moments, until the winking movements of the eyelids have distributed the tuberculin over the eyeball and inner surface of the lids.

At intervals during the following twenty-four hours the tested eye is carefully compared with the other one, and any abnormalities are noted. The occurrence of congestion or a manifest overflow of tears, and the formation of a considerable amount of more or less opaque muco-purulent material in the eye are to be interpreted as a certain indication that the animal in question is tuberculous. The complete



FIG. 3.—Conjunctival reaction at twenty-fifth hour.

absence of these abnormalities is, on the other hand, to be noted as non-reaction.

In the intracutaneous test the tuberculin is injected into either of the two thin double folds of skin which are seen extending from the root of the tail on either side of the animal's anus when the tail is elevated. What constitutes a reaction here is a more or less pronounced swelling and thickening of this fold, the degree of thickening being readily ascertained by comparison with the opposite fold. In distinct reactions the thickening is manifest to the eye even at a considerable distance, but one has also to grasp the folds between the thumb and fingers in order to ascertain their relative thickness.

As a rule there is an appreciable thickening of the inoculated fold round the point where the tuberculin was injected whether the animal is tuberculous or not, but what is specially characteristic of a genuine reaction is that the swelling continues to increase from its first appearance until the second day or even later (see figures).

In the experiments which were carried out at the Royal Veterinary College some of the animals tested had previously been infected with tubercle bacilli of the human or of the avian type, but the chief interest attaches to the tests which were applied to animals infected with ordinary bovine tuberculosis.



FIG. 4.--Reaction to intracutaneous test at twenty-seventh hour.

The result proved extraordinarily accurate in the case of the subcutaneous test, but, while striking reactions were obtained with each of the other two methods of testing, the failures with them were far more numerous than with the first method.

Out of a total of fifty animals tested for the first time after subcutaneous inoculation with bovine tubercle bacilli, forty-seven had a positive reaction (a rise of 2° F. or more) and in the remaining three cases the temperature was already distinctly above the normal (over 103.5° F.) before the tuberculin was injected. These three cases cannot be regarded as instances of failure on the part of the test, for it is generally recognised

that animals with such temperatures to begin with are unsuitable for the subcutaneous test.

Including animals tested for the first time after infection with human or avian tubercle bacilli, but excluding those in which the temperature was already too high, the total number of first subcutaneous tests was 122, and in only seven of these was the rise of temperature less than 2°. Moreover, it is important to note that five of these failures were in animals infected with avian tubercle bacilli and tested with tuberculin prepared from mammalian bacilli (so-called heterologous tuberculin).



FIG. 5. —Reaction to intracutaneous test at twenty-ninth hour.

A total of 157 conjunctival tests were carried out on animals experimentally infected with tuberculosis, and in 77 of these cases there was no reaction whatever. This statement, however, hardly indicates the inferior results obtained by this method as compared with the ordinary subcutaneous test, for in 29 cases the reaction which did occur fell far behind what is shown in any of the accompanying figures, and took the form of a small particle of mucus present at one period of observation only.

The intracutaneous test had fewer failures than the conjunctival but more than the subcutaneous. Thus, accepting as "positive" the degree of swelling which made the inoculated fold of skin at least twice the normal thickness up to fifteen hours

or later, out of 124 intracutaneous tests of certainly infected animals 87, or 70 per cent., had a positive result.

It would be a great mistake to conclude from the facts which have just been mentioned that the conjunctival and intracutaneous methods are of little or no value for the diagnosis of tuberculosis because they have been proved less reliable than the old subcutaneous method. On the contrary, the two new methods are capable of affording very great service in actual practice, and they are likely to come into general use in the future.

As already indicated, the proportion of errors may be very great when either the conjunctival or the intracutaneous



FIG. 6.—Reaction to intracutaneous test at thirty-second hour.

method is employed by itself—much greater as a rule than when one trusts entirely to the subcutaneous test. It must be remembered, however, that there are circumstances in which it is absolutely useless to employ the last test, or which greatly increase the risk of error in using it. The subcutaneous method is useless when the animal to be tested has a temperature already decidedly above the normal, and it is untrustworthy when it has to be carried out in conditions that tend to make the temperature erratic. The proportion of errors from the subcutaneous test may therefore be very serious if one attempts to carry it out with field animals that have only been housed for the purpose of the test, or with animals that have recently been moved from their accustomed

surroundings. In these circumstances the temperature of the animals is often for days, or even for weeks, subject to considerable fluctuations, which may include elevations that would be indistinguishable from genuine reactions in animals being tested.

The best way of avoiding the errors likely to arise in this way is to refrain from testing in the conditions mentioned, and to wait until trial observations have shown that the temperature has become steady; but when the test cannot be delayed the conjunctival and the intracutaneous methods should be employed at the same time.

The circumstances which have just been considered are those in which the principal risk of error is that the animal may be wrongly condemned as tuberculous, but some of the errors of the subcutaneous test are of the opposite kind, there being no distinct temperature reaction although the animal is actually tuberculous. Judgment as to which of these errors is the greater may depend on the particular point of view—that of buyer or of seller; but there can be no doubt that when an owner is having his own cattle tested with a view to eradicating the disease from his herd it is the errors of the second kind that have the worst consequences. It is here that the new methods of testing are likely to prove of great value in the future, for, although they are less reliable than the subcutaneous method when employed separately, they sometimes provoke very distinct reactions in tuberculous animals in which the result of the subcutaneous test has been doubtful or absolutely negative. And in this connection it is important to know that distinct reactions to either the conjunctival or the intracutaneous test may be accepted as almost conclusive evidence that the animal is tuberculous. In other words, the errors of these methods are practically all in the direction of failing to cause a distinct reaction in animals that are tuberculous, and seldom or never in the opposite direction. The conjunctival and intracutaneous methods are also valuable because they may be used to counteract the dishonest practice of giving an animal repeated injections of tuberculin in order to bring it into the condition in which it will not react to the subcutaneous test. Very fortunately, the tendency to react to the other two methods, and especially to the conjunctival method, cannot be so easily abolished, and very pronounced reactions may be obtained with either or both of them in animals that have temporarily lost the power of reaction to the subcutaneous test.

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ANNUAL REPORT FOR 1915 OF THE CONSULTING CHEMIST.

THE number of samples analysed in the Society's Laboratory on behalf of Members was, during the twelve months, 300. This is a considerable reduction on the 436 samples of 1914, which then showed a slight increase on the figures for 1913.

In addition, 199 samples of milk and 12 samples of cider were analysed in connection with the Society's Country Show at Nottingham.

The reduction in the number of samples sent was, no doubt, influenced much by the prevalent desire for economy, though it cannot be said that farmers, any more than other people, always practise economy in the right direction.

With the great rise in prices for both fertilisers and feeding-stuffs, one would think that purchasers would be even more careful to see that they got their full value, and, though it must be remembered that the facilities for obtaining analyses have, of late years, been largely increased, it is yet somewhat remarkable that with linseed cake at 12*l.* a ton, cotton cake at 9*l.* a ton, sulphate of ammonia and nitrate of soda at 14*l.* 10*s.* per ton or thereabouts, only 5 samples of linseed cake, 7 of cotton cake, 4 of sulphate of ammonia, and not a single one of nitrate of soda have been sent during the year by the 10,000 odd Members of the Society. This is the more remarkable as, though the work of the year has shown the quality of agricultural goods generally to have been very satisfactory, cases still continue to be brought to light which show the need of constant vigilance and how money can be saved by having deliveries systematically checked by analysis.

No particular, or new, form of adulteration has come to light during the year, and it is satisfactory to record that the quality of offals—to which special attention was drawn in last year's report—has much improved.

The feature of the year has been the great rise in prices of both fertilisers and feeding-stuffs, more especially the latter. The increased cost of freight has been mainly responsible for this.

As showing the increase of cost since the war began, linseed cake, which was 9*l.* per ton in 1914, has risen to 12*l.* and 13*l.*; cotton cake, formerly 5*l.* 15*s.* or 6*l.* a ton, has gone up to 9*l.*, while decorticated cotton cake, ground nut cake, soya bean cake and similar cakes have all become much dearer. The same applies to wheat offals, rice meal and other feeding materials. This has given a great opportunity to the extended use of palm-nut cake and meal and of coco-nut cake, which, by virtue of the lower prices (7*l.* to 8*l.* per ton) at which they have been offered, have had a largely increased sale.

Owing to the heavy requirements of the Government for sulphuric acid for the manufacture of explosives, artificial manure makers have been placed in considerable difficulty with regard to the manufacture of superphosphates, &c., and the execution of orders for these manures.

Moreover, the Government has thought it necessary to purchase supplies of nitrate of soda and to requisition stocks of sulphate of ammonia for agricultural use.

The dearth of potash salts continues, none of these being exported from Germany to this country. Little or nothing has been heard of new supplies from Spain and elsewhere, and the means suggested for meeting the deficiency by the reviving of the Kelp-burning industry, the burning of hedge-clippings, &c., have, as I expected, not reached any practical importance.

The problem of the economical separation of potash in the form of soluble salts from minerals containing potash is one of the greatest importance, and demands immediate investigation. Meantime, agriculturists have had, practically, to do without potash this year.

Of industries, the one for which a fair opening seems to offer—the Beet-Sugar Industry—has not made much real progress, the unfortunate example of the Cantley (Norfolk) factory no doubt acting as a deterring influence, and preventing the further outlay of money by the Government in encouraging this industry, though it is worthy of note that they continue to subsidise the tobacco-growing industry in these islands. As I have more than once pointed out, I believe that the present would be a most opportune time for reviving the sugar-beet industry in this country, if this were established under proper conditions, especially when one bears in mind the agricultural prosperity that has followed it wherever it has been introduced on the Continent. If the present opportunity, however, be lost, it is no use thinking of it in the future, and I still consider that the subject is one to which serious attention should be turned, and to which the Government should give encouragement.

A. FEEDING STUFFS.

1. *Linseed and Linseed Cakes.*

All the five samples of linseed cake submitted were found to be pure and good.

Two samples of home-grown linseed which were sent to me gave :—

Percentage of :—

	1	2
Oil	40.03	41.55
Impurities	2.25	4.16

The impurities, in each case, consisted of weed-seeds, mostly charlock and polygonum, with earthy matter.

2. Cotton Cake.

A sample was sent me of what was stated to be a "new brand" of cotton seed cake. It cost, in February, 1915, 6l. 15s. a ton, and was guaranteed to contain 4 per cent. of oil and 18 per cent. of albuminoids. The analysis was:—

Moisture	10.81
Oil	3.93
¹ Albuminoids	18.62
Carbohydrates, &c.	62.61
² Mineral matter	4.03
	<hr/>
	100.00
¹ Containing nitrogen	2.98
² Including sand . . . . .	.10

The above showed the cake to be of extremely poor quality, it being considerably below the average in respect of both oil and albuminoids. Moreover, it was distinctly acid and in bad condition.

3. Decorticated Cotton Cake.

	A	B
Moisture	9.03	8.44
Oil	15.41	13.45
¹ Albuminoids	33.56	40.75
Carbohydrates, &c.	35.56	30.12
² Mineral matter	6.44	7.24
	<hr/>	<hr/>
	100.00	100.00
¹ Containing nitrogen	5.37	6.52
² Including sand . . . . .	.10	.14

"A" was said to be Peruvian decorticated cotton cake. Although it gave a good percentage of oil, it was only semi-decorticated, and, moreover, I found in it a small amount of castor-oil bean. "B" was of fresh and good quality.

4. Palm-nut Cake and Meal.

Several samples of these have been received. In my last annual report I gave analyses of samples of palm-nut cake and meal which showed considerable variations in quality. These same variations have continued, and it is impossible to say what the general composition is. Moreover, palm-nut meal sometimes has the oil chemically extracted, and the percentage of oil left in it may be very variable, going down to 2 per cent., or even less. I have met also with a material sold under the name of "pig meal," which was practically nothing more than palm-nut meal.

Though palm-nut cake, on account of its lower price, has been much more freely used than previously, it is questionable whether it is a thoroughly acceptable food for all stock, and I have met with several cases in which difficulties have been experienced in getting stock to take to it. I might say, however, that I have come across but few instances, either with palm-nut cake or meal, in which these have been rancid or not in good condition.

5. *Coco-nut Cake.*

The following are analyses of two unusually rich samples :—

	A	B
Moisture	10.73	9.34
Oil	15.34	22.34
¹ Albuminoids	20.56	18.50
Carbohydrates, &c.	37.05	45.18
Woody Fibre	10.18	
² Mineral matter	6.14	4.64
	100.00	100.00
¹ Containing nitrogen	3.29	2.96
² Including sand	1.44	.19

6. *Rice Meal and Rice Cake.*

	A Rice Meal	B Rice Cake
Moisture	9.78	9.93
Oil	15.03	4.15
¹ Albuminoids	12.44	7.13
Carbohydrates, &c.	49.87	73.75
Woody fibre	4.75	
² Mineral matter	8.13	5.04
	100.00	100.00
¹ Containing nitrogen	1.99	1.14
² Including sand and silica	1.69	1.24

"A" was a very good sample and well above the guarantee of 11 per cent. of oil. The price was 6*l.* 10*s.* per ton delivered.

"B" was called "rice cake." It was a poor material and distinctly acid in character.

7. *Oat Refuse.*

	A	B
Moisture	6.77	—
Oil	1.09	.86
¹ Albuminoids	3.56	1.06
Digestible fibre, &c.	51.87	—
Woody fibre	32.43	—
² Mineral matter	4.28	4.54
	100.00	
¹ Containing nitrogen . . . . .	.57	.17
² Including silica	2.99	3.49

"A" was called "oat siftings" and cost 3*l.* 12*s.* 6*d.* per ton.

It was a waste material and worth nothing like the price asked.

"B" was sold as "Oat Feed," at 5*l.* 5*s.* per ton. The purchaser complained that his cows, pigs, and poultry would not eat it. It was sold with a verbal guarantee of containing 5 per cent. of oil. It was nothing but oat refuse, and should not be regarded as a feeding material at all.

8. Pig Meal.

Under this name were sold the following:—

	A	B
Moisture	13.71	8.64
Oil	6.15	3.85
¹ Albuminoids	22.38	22.56
Carbohydrates, &c.	39.54	20.24
Woody Fibre	13.44	8.07
² Mineral matter	4.78	36.64
	<hr/> 100.00	<hr/> 100.00
¹ Containing nitrogen	3.58	3.61
² Including sand.	1.00	30.13

"A" cost 6*l.* 5*s.* per ton, and was practically nothing but palm-nut meal. It is questionable, however, whether this is a food that is suitable for pigs, for it contains a not inconsiderable amount of indigestible woody fibre.

"B" cost 7*l.* per ton. It contained, as will be seen, over 30 per cent. of siliceous matter and dust, and was nothing more than sweepings, and not fit to be used as a food for stock.

9. Miscellaneous Feeding Materials.

	A Feeding Meal	B Patent Bran	C Red Clover Seed Shellings	D Sainfoin Shellings
Moisture	6.48	9.74	11.72	12.36
Oil	5.02	3.56	8.12	1.26
¹ Albuminoids	12.62	10.44	19.75	6.25
Carbohydrates	33.59	39.09	45.47	38.66
Woody fibre	31.33	28.18	10.55	34.94
² Mineral matter	10.96	8.99	4.39	6.53
	<hr/> 100.00	<hr/> 100.00	<hr/> 100.00	<hr/> 100.00
¹ Containing nitrogen	2.02	1.67	3.16	1.00
² Including sand	2.24	1.24	.29	.05

"A" was called "Feeding Meal," and cost 5*l.* a ton. It was a waste material composed entirely of the shelling of seeds and containing much indigestible matter.

"B" was called "Patent Bran," costing 6*l.* a ton. In composition and general character it was not unlike "A," being apparently the shellings of cotton seed. The use of the term "bran" for such material is, without question, improper.

"C" gave quite a good analysis, and I see no reason why it should not, when available, be used for stock.

"D" had about the same value as wheat straw, but was probably a material that would not be as readily assimilated.

B. FERTILISERS.

1. *Compound Manures.*

It is with the varying class of manures sold under the name "Compound Manures" that cases of over-charge are most frequent. The following are illustrations:—

	A Compound Manure	B Compound Fish Guano	C Horse Slaughterers' Guano
Moisture	28·01	16·67	17·05
Organic matter	38·58	29·69	29·42
Phosphate of Lime . . .	7·21	8·41	10·34
Carbonate of Lime, &c. .	8·47	23·24	24·13
Insoluble siliceous matter	17·73	21·99	19·06
	<hr/> 100·00	<hr/> 100·00	<hr/> 100·00
Containing nitrogen . .	2·33	1·62	2·21
equal to ammonia . . .	2·83	1·96	2·68

"A" cost 4*l.* per ton, but 50*s.* would be ample for it.

"B" cost 3*l.* 15*s.* per ton, and was decidedly dear. Moreover, "fish guano" was not a proper description of it, the nitrogen being derived mainly from shoddy. It came from Hull.

"C" cost 3*l.* per ton at the works. Its condition was good, but it was dear at the price.

2. *Sulphate of Ammonia.*

It is not often that this fertiliser is found to be inferior, but the following is a case in point. The purchase was in Kent. The sample was very acid and of inferior quality.

Moisture	3·07
Free acid	4·22
Ash	·60
Pure sulphate of ammonia	92·11
	<hr/> 100·00
Containing nitrogen	19·46
equal to ammonia	23·63

3. Soot.

A very good sample was the following, costing 3*l.* per ton in E. Yorks, and being well worth the money.

Moisture	13.23
Organic matter and salts of ammonia	63.35
Oxide of iron, &c.	11.34
Sand	12.08
	<hr/>
	100.00
Containing nitrogen	4.40
equal to ammonia	5.34

4. (a) Shoddy, (b) Felt Trimings, (c) Fleece Comblings.

(a) A sample of shoddy, guaranteed to contain 6 per cent. of ammonia and costing 50*s.* 6*d.* per ton, gave on analysis :—

Nitrogen	3.38 per cent.
Equal to ammonia	4.10 "
Sand	35.14 "

This was dirty and much below the guarantee.

(b) Under the name "felt trimmings" was sent to me a sackful of material which consisted of large pieces of felt (an entire felt hat was found in it). It was very wet, and from the nature of the material would take long to decompose in the soil. The analysis was :—

Moisture	52.50 per cent.
Nitrogen	5.20 "
Equal to ammonia	6.31 "

This cost no less than 7*l.* per ton, a price which, considering the state of the material, was altogether out of the question.

(c) A sample of "fleece comblings" gave :—

Moisture	7.73
Organic matter	45.78
Oxide of iron, lime, &c.	7.54
Siliceous matter	38.95
	<hr/>
	100.00
Containing nitrogen	1.86
Equal to ammonia	2.26

5. Poultry Manure.

The principal difficulties in purchasing this material are to have it in dry, friable condition, and to avoid admixture with earth. An excellent sample, however, was sent me, this being about the best I have ever come across. It consisted of the pure droppings of the birds, collected and stored under cover.

Moisture	22.41
¹ Organic matter and salts of ammonia	52.12
Lime	3.74
² Phosphoric acid	3.62
³ Alkalies, &c.	6.71
Insoluble siliceous matter	11.40
	<hr/> 100.00
¹ Containing nitrogen	5.03
equal to ammonia	6.11
² Equal to phosphate of lime	7.91
³ Containing potash	2.03

This was sold at 30s. a ton, and, considering its excellent condition and freedom from extraneous matter, earth, &c., was worth a good deal more than the price asked for it.

6. *Lawn Fertilisers.*

These materials are frequently sold at prices altogether beyond their value. One such was the following, which cost 17*l.* 10s. per ton, its real value being not more than 4*l.* per ton.

Moisture	4.39
¹ Organic matter and ammonia salts	19.35
² Phosphoric acid . . . . .	.69
Lime	3.68
Oxide of iron and alumina	3.04
Magnesia . . . . .	.20
Potash . . . . .	.21
Soda . . . . .	.53
Sulphuric acid, &c.	5.19
Insoluble siliceous matter	62.12
	<hr/> 100.00
¹ Containing nitrogen	3.38
equal to ammonia	4.10
² Equal to tribasic phosphate of lime	1.50

7. *Tannery Refuse.*

A sample of this gave :—

Moisture	49.46
Lime	28.72
¹ Organic matter, &c.	19.89
Insoluble siliceous matter	1.93
	<hr/> 100.00
¹ Containing nitrogen . . . . .	.39
equal to ammonia . . . . .	.47

Though smelling of ammonia, there was but little present, and the material, which consisted of lime with hair in it, was a wet mass which it would be difficult to use direct on the land.

8. Ashes of Horse and Mule Droppings, Peat, &c.

In the search for something to supply potash to the soil in the absence of the imported potash salts, a number of materials have been tried, these consisting mainly of ashes of one kind or another. Among them have been the ashes left after burning the droppings of horses, mules, &c., at the numerous military camps over the country.

	A	B	C	D
	Burnt Horse-Manure	Burnt Horse-Manure after washing by rain	Burnt Mule-droppings	Burnt ashes
Moisture . . .	69	11.51	1.34	3.19
Organic matter . .	4.15	4.02	4.04	29.62
Phosphoric acid . .	5.83	2.86	1.78	—
Oxide of iron and alumina . . .	5.25	5.06	7.24	19.30
Lime . . .	12.31	10.09	.95	14.69
Potash . . .	8.54	1.24	1.94	.58
Soda . . .	3.11	1.56	.45	—
Magnesia, carbonic acid, &c. . .	7.06	3.58	3.70	19.61
Insoluble siliceous matter . . .	53.06	60.08	79.56	12.61
	100.00	100.00	100.00	100.00

Equal to phosphate of lime . . .	12.74	6.25	3.89	—
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"A" was from fresh heaps of burnt horse-manure, "B" from the same heaps after exposure to rain; "C" came from the burnt droppings of army mules, while "D" consisted of the ashes obtained from burning peat.

It will be noted that "A" was very rich in potash, but that "B" had suffered much through the washing. "C" contained much more earthy matter than the two former, while "D" had only a very moderate quantity of potash.

C. MISCELLANEOUS.

Soils.

(a) Soil deficient in lime.

(b) Soil with magnesia in excess.

(a) Of this soil (which came from the neighbourhood of Derby) it was complained that the grass died away in patches. On the surface was a quantity of coarse grass, and below this a

"matting," nearly 1 in. in depth, of roots—presenting the appearance that betokens the need of liming. I was not surprised, therefore, to find this conclusion confirmed by the analysis, which gave :—

Organic matter and loss on heating	6.74
Oxide of iron and alumina	6.74
Lime	10
Phosphoric acid	14
Alkalies, magnesia, &c.	77
Insoluble silicates and sand	85.51

100.00

(b) I give the following as another example of what I have of late years frequently commented on, viz., that soils in which the amount of magnesia present is largely in excess of the lime are frequently unproductive or unsatisfactory. In the present case I was informed that the soil (which came from near Redditch) would not grow any appreciable quantity of grass and that stock would not graze it if they could help it. The analysis was :—

Organic matter and loss on heating	9.47
Oxide of iron	4.52
Alumina	6.72
Lime	79
Magnesia	1.69
Potash	1.25
Soda	2.31
Phosphoric acid	11
Sulphuric acid	14
Insoluble silicates and sand	73.00

100.00

Nitrogen	339
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The soil was a red marl, and while, ordinarily speaking, it might be thought to have lime in sufficiency, the lime was so overweighted by the excess of magnesia that recourse should be had to further liming.

The following is a list of the samples submitted by Members of the Society during the twelve months, December 1, 1914, to November 30, 1915 :—

Linseed	8
Linseed cakes	5
Uncorticated cotton cakes	7
Decorticated cotton cakes	10
Compound feeding cakes and meals	51
Cereals	14
Rice Meal	6
Dried grains	3

Superphosphate	10
Dissolved bones	1
Compound manures	9
Raw and steamed bones	7
Peruvian guano	5
Fish, meat, and bone guanos	4
Basic slag	10
Sulphate of ammonia	4
Shoddy	44
Refuse materials	9
Sewage sludge	2
Lime	5
Soot	1
Waters	40
Soils	16
Milk, cream, and butter	21
Miscellaneous	8
Total	330

J. AUGUSTUS VOELCKER.

1 Tudor Street, E.C.
December, 1915.

ANNUAL REPORT FOR 1915 OF THE BOTANIST.

DETERMINATIONS were made of the purity and germinating capacity of 198 samples of seeds. The number is approximately the same as that of the previous season (218), but there was a marked difference in the character of the seeds tested. Relatively few of the more permanent grasses were sent in for examination, but a considerable increase in the number of samples of wheat, barley, and especially of oats practically made up for the deficiency. These accounted for almost one-third of the total, namely for 62, whereas in the previous year there were only 32 or roughly one-seventh of the total number.

The seeds examined proved to be better than a knowledge of the difficulties seedsmen were experiencing in obtaining supplies from abroad led one to anticipate. The germination, particularly of home-grown stocks of clovers and rye grass, was exceptionally good, while the purity, if not in some cases quite up to the average of former years, was still satisfactory. In several cases indeed the "real value" of clovers and rye grasses (*i.e.*, the percentage of purity multiplied by the percentage of germinable seeds and divided by 100) was between 98 and 99.

Out of the whole series there were only five samples reported on adversely. Two of these were white clover containing

dodder seeds, one broad red clover containing Chilian dodder, one a low grade sample of perennial rye grass worth about one-half the price asked for it, and one of milled sainfoin with a germinating capacity below 50 per cent.

The cereals examined were, for the most part, home grown, and did not reach quite the same standard of purity as the highly cleaned grain supplied by the seedsmen. But for resowing they were satisfactory even where an extra seed allowance per acre had to be used to make up for deficiencies in germination.

In the course of the year 65 identifications of plants, including weeds, grasses and cereals, were made. The dyer's green weed was sent in on six occasions from the south and the west of the country. This weed occasionally establishes itself in pastures, and as stock refuse to graze on it it seeds freely, and consequently if the conditions for its growth are favourable it may cover considerable areas. No methods are known for its extermination except the tedious one of forking out the deeply rooted plants. Experiments are being made to determine whether any of the commonly used artificial manures will check its spread.

Yarrow appears to have been unusually prevalent in the past season. In one case reported to me it was so abundant that it had practically crowded out the grasses, and the only method of dealing with it appeared to be to break up the pasture. In other cases there was a probability that taking a hay crop for one or two seasons would check the plants sufficiently to allow the grasses to compete with them more satisfactorily and so prevent the pastures from being completely over-run.

The creeping buttercup, a troublesome weed of both grass and arable land, especially on heavy soils, has been practically eliminated in one case by the application of two dressings of sulphate of ammonia at the rate of three-quarters of a hundred-weight per acre. Experiments are also being tried on the small scale with the object of destroying this weed by spraying with very dilute solutions of an arsenical weed-killer. The method has been used with satisfactory results on a very badly infested lawn.

Inquiries with regard to the destruction of moss in damp pastures were made on two occasions. Draining could not be carried out in either case, so as a temporary measure superphosphate of lime was applied at the rate of two hundred-weights per acre. This has caused the almost complete destruction of the moss, but it is unlikely that the cure will be a permanent one whilst conditions favourable for its growth remain.

The common wayside weed *bartsia*, which is partially parasitic on the roots of grasses, was reported on one occasion to be so abundant in a field of lucerne that it had more or less ruined the crop.

The number of fungoid diseases of plants (42) reported on was very similar to that in the former year. The chief diseases were as follows :—

- On potatoes : "Curl," potato disease, wet-rot of the tubers, and a spot disease of the foliage.
- On roots : A bacterial disease of mangold seedlings, rust on the foliage of mangolds, and finger and toe in swedes.
- On cereals : Mildew on oats, blindness in barley and wheat, bunt in wheat, and a disease causing the breaking of the straw about ground level.
- On clovers : Sickness of lucerne.
- On fruits : Mildews of apple, peach and gooseberry, scab on pears, apple canker, and silver leaf in plums.
- On garden crops : Finger and toe in cabbage, mildews on vegetable marrow and parsnips, botrytis on lettuce, and various diseases of minor importance on ornamental plants.

The majority of the diseases are well known, but two, of which short descriptions are given below, are not so frequently met with.

Leptosphaeria culmifraga. Several times in the course of the past three seasons specimens of an obscure disease of wheat, characterised by a peculiar brittleness of the straw, have been sent in for examination. The material was never adequate for the purpose, and the cause of the disease remained untraced. Just before harvest this year another inquiry accompanied by an abundant supply of good specimens was received, and the disease was traced to the fungus *Leptosphaeria culmifraga*.

The attacked plants generally become discoloured and usually either brown or black towards the base of the stem. This symptom is particularly marked if the dead leaf-sheaths are stripped off. These discoloured areas are permeated with the mycelium of the fungus. They form weak places in the stems which readily break in rough weather, but even if the stem remains standing it usually fails to form any grain. Unfortunately the presence of the disease is not likely to be detected until it is too late for curative measures to be adopted.

It is doubtful whether it is widely prevalent in this country at present, but it is well known on the Continent, and said to be serious in some seasons.

Sporidesmium solani varians appears to be fairly common on early potatoes. The following symptoms were noted in a

crop of May Queen at the stage when the haulm had made practically its full growth. The tips of the leaves turn brown and dry up, and on the discoloured portions minute olive-coloured patches of fungus spores are produced. These dry, dead areas may extend over the whole of the foliage with the result that the plant is so crippled that it fails to produce a normal crop of tubers. In the case under observation a single spraying with Bordeaux mixture checked the spread of the disease at once, and a comparatively good yield of tubers was obtained.

General inquiries (140) were again more numerous than in former years, and they covered a very wide range. An article in the *Journal of the Board of Agriculture* calling attention to the shortage of drugs and giving information on the methods of cultivating the commoner drug plants led to a considerable amount of correspondence. Several Members proposed to take up the cultivation of such plants as foxglove, henbane, monkshood, &c., but difficulty was met with in obtaining supplies of seed. This was ultimately overcome, and several sowings have, I understand, been made.

An inquiry of some interest was made late in the season with regard to the "sporting" of swedes. Some two or three per cent. of the plants, distributed irregularly over the field, had failed to form bulbs, and had all the appearance of rape. In the same week attention was called to the same phenomenon from two outside sources, so that possibly it has been fairly general this season. The usual explanation is that rape seed has become mixed with the swede seed, but there are good reasons for believing that this will not hold in any of these cases. Examples of the "rogues" have been obtained from all three sources together with a supply of the original seed sown, and it is hoped that the investigation now in progress will throw some light on the subject.

The problem of increasing the home-grown supplies of food-stuffs led to many inquiries on such subjects as the suitability of certain varieties of wheat for spring sowing and of various crops for freshly broken land, whilst on a smaller scale there were inquiries with regard to more intensive cultivation of garden space. In view of the importance the spring wheat crop has assumed, a special study of it has been made during the past season, the results of which are published on page 37 of the current number.

The prevention of losses through the attacks of various parasitic fungi by the employment of fungicides has been the subject of more inquiries than usual, and methods for the preparation of the more important washes have been described where necessary.

Another marked feature of the year's work has been the lack of inquiries with regard to mixtures of seeds for the formation of permanent grass land and the fewness of the cases where mixtures for the renovation of sown pastures were required.

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ANNUAL REPORT FOR 1915 OF THE ZOOLOGIST.

THE number of applications has fallen off somewhat during the past year, but the range covered by them has been extremely wide. There is little new to report concerning most of the pests complained of, and they are merely mentioned under the various sections to afford a record of the year's pests as indicated by the inquiries received. The most important agricultural pest which had previously received little attention was undoubtedly the sainfoin midge, which has been remarkably wide-spread and injurious, and will probably have a marked effect on the seed harvest of that crop. Not the least part of the work of the department has been subsidiary to the medical and sanitary investigations arising out of the war, numerous specimens of parasites and their insects having been sent for identification.

FOREST TREE PESTS.

These have comprised various bark beetles—especially those of the elm and ash—and other timber borers such as wood wasps and goat moth. Among those injuring dry timber the longicorn *Callidium variabile* has been noticeable. Inquiries have been received about pine beetle, the two larch borers and various aphidae, concerning one of which—*Lachnus larix*—a note is appended under the head of "Wasps." Professor Somerville, of Oxford, sends me word of a new pest attacking the lower part of the trunks of old Scots' pine, a tortricid moth, *Stigmaeota coniferana*, the caterpillar of which bores into the bark. No young trees have yet been observed to be attacked, and it is quite possible that the insect does no serious harm.

FRUIT PESTS.

The following fruit pests were reported:—On apple, the apple-sucker, codlin moth, apple saw-fly, goat moth, winter moth, and woolly aphis; on pear, slug worm, blister mite, and leopard moth; on plums, various species of aphis; and

on bush fruit, raspberry beetle, magpie moth, currant saw-fly, and "big bud."

FARM AND GARDEN PESTS.

There appears to have been the usual amount of injury by wireworm, millipede, surface caterpillars, root maggots, and turnip gall-weevil, and a few inquiries have been received about celery fly and mangold fly. A new attack on various species of *Brassica* has been noted, occurring when the plants are quite young and before they are planted out. One correspondent had observed that many such plants had to be rejected on account of injury to the stem which was evidently bored by some insect. In the stems of specimens sent two kinds of grubs were found to be boring—one that of a fly *Phytomyza*, and the other a weevil grub. The fly grub seemed to be comparatively unimportant. Naturally a leaf-miner, some individuals seemed to have invaded the stem; but the weevil grub seemed to be the principal cause of the trouble. Its identity is not yet established, but on the Continent similar injury is inflicted by weevils of the genus *Baridius*. These are, however, not often found on *Brassica* in England, and a *Ceutorhynchus* weevil may be at work. The matter deserves attention, and the pest will be looked for next season.

Everywhere sainfoin crops seem this year to have been attacked by "midge." Happily this pest does not prevent an excellent crop of hay being gathered, but the heads turn out "blind," and seed-formation is seriously interfered with. Not much attention has hitherto been called to this insect, which has often been supposed to be the same as the familiar midge which destroys clover seed. There are records of a specific sainfoin midge in the works of Continental writers, the so-called *Cecidomyia onobrychidis*, but its work, as described by them, is of a different nature. Specimens of the midge have been bred out at Cambridge, and we hope soon to make sure of its identity.

The midge, a very small black fly, lays its eggs in the opening flowers of the sainfoin, and these flowers are soon found to be teeming with little yellow maggots which devour the developing seed. These maggots are of the typical midge kind, being destitute of legs and furnished with an "anchor process," and they can skip like cheese maggots, placing head and tail together and separating them suddenly. In the cases investigated it was noticed that neighbouring clover crops, and even casual clover heads at the borders of the sainfoin fields entirely escaped attack.

The treatment which naturally suggests itself is the feeding off of the first sainfoin crop, so as to prevent the maggots

coming to maturity. Cases were noted in which two or even three cuttings were taken, each being badly infested by the midge, but the first crops were stacked in the sainfoin field, and investigation of these stacks showed that they might well supply any number of flies to attack the later crops. The litter where the "pitcher" had stood consisted largely of fallen sainfoin flowers from which the grubs would readily escape to the ground to emerge as midges, and the outer parts of the stacks were full of the live grubs. Nothing short of feeding off or ensilage would seem likely to prevent the survival of a large part of the brood. So numerous and widespread was the fly last summer that the crop of sainfoin seed must be greatly reduced.

There were not so many cases of frit-fly in oats reported this year. Wheat bulb-fly and gout-fly were the subjects of a few inquiries.

ANIMAL PARASITES.

Questions have been answered concerning many of the parasites of domestic animals, including warble-fly, sheep nose-fly, sheep blow-flies, ticks, lice, and intestinal worms. Advice has also been given in cases of bee disease.

In a curious case of eruptions occurring on the heads of army mules which had much the appearance of psoroptic scabies, the only parasite which could be found was a species of *Tarsonemus* mite. Mites of this group are vegetable feeders, and several are known to attack various plants. The best known example is the "begonia mite," but there are others which attack such crops as cotton and barley. In these cases they sometimes attack the hands of workers in the infested material, leaving their vegetarian habits to become, for the time being, parasitic on man. Something of the same sort probably occurred in the case of the mules.

WASPS.

Wasps have been particularly numerous, in some districts at all events, during the past season. There is some evidence that the plan of encouraging the capture of the queens during the winter months by offering small prizes at local flower shows for the largest number collected has a marked effect in reducing the number of wasps in the district where it is adopted. In some localities where this plan has recently been discontinued, wasps' nests abounded last summer.

It is worth while recording a case of the association of wasps with aphids, though many similar cases have been previously described. Thousands of wasps were observed in September to be visiting a lilac bush. The first suggestion

was that a nest must be close at hand, but examination showed that the phenomenon was due to quite a different cause. The lilac bush was shaded by a spruce tree which was badly attacked by the large aphid, *Lachnus piceæ*, and the consequent "weeping" of the spruce upon the lilac leaves formed the attraction which brought the wasps from a distance. The phenomenon continued for fully a month, both wasps and aphids disappearing about the middle of October. Hundreds of the wasps were caught and examined and they seemed pretty equally divided between the two species *Vespa germanica* and *V. vulgaris*, the latter somewhat predominating. All were workers, not a single male or queen being observed. Many dead wasps were on the ground beneath the bush, and there were generally a few helpless and apparently intoxicated individuals crawling about.

On September 23, Lieutenant Perowne, at the harbour of Wells on the Norfolk coast, observed a large number of wasps apparently arriving from the sea and continuing all day long to reach the land in an exhausted condition. Many were seen to be drowned in the sea. The specimens sent were all queens of the species *Vespa germanica*. Further information was requested—especially as to whether the specimens sent were particularly selected large examples and whether there were any reports of their being noticed by vessels far out at sea. The wasps were said to be all of the size of the specimens sent, and as to number, "there was not a minute all day without seeing at least one, and more often three or four at a time." It was alleged moreover that a fishing smack crossing the Wash, and sixteen miles from land, was "covered by wasps." It was naturally thought that they might be immigrants from the Continent, but it is pretty certain that the insects were of English origin and having been blown out to sea were struggling back again. *Vespa germanica* is a common English species, and at the date of the observation the queens were leaving the nests to find shelters in which to hibernate. The winds had been variable and the wasps might have been carried out to sea and back again, or possibly even across the Wash, but it is highly improbable that Continental swarms, if they arrived at all, should alight in such numbers on a restricted patch of the Norfolk coast. The case is, however, an interesting one and deserves to be recorded.

Early in July I received a number of caterpillars taken from the nest of a solitary wasp "built in the keyhole of a chest of drawers in one of the bedrooms." The sender, Lady Estella Hope, further wrote: "In addition to its own grubs, at least forty caterpillars had been collected and kept together in a different compartment, evidently the larder. The caterpillars

were all alive but quite unable to walk, as the wasp had evidently partly killed them."

The wasp itself was not sent, but evidently a member of the genus *Odynerus* was in question. There is a large group of "solitary" wasps—living singly and not in communities—with very remarkable habits. The more highly specialised species dig their own nests and supply their grubs with insects which have been so skilfully stung as to be quite incapable of motion though alive and fresh for a fortnight or so. *Odynerus*, however, generally selects an already existing hole in a wall or post for her nest, and the caterpillars with which she stores it are capable of considerable movement. It is rather remarkable that two cases should have come to my knowledge this summer of an *Odynerus* building in the keyhole of a chest of drawers—the one recounted above and another which occurred at Cambridge.

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THE WOBURN EXPERIMENTAL STATION OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

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FIELD EXPERIMENTS, 1915.

THE season of 1915 was marked by heavy rain during the winter, followed by prolonged drought in summer.

The sowing of wheat took place in unsettled weather, and there was continuous and heavy rain from the middle of October, 1914, to the end of February, 1915. December, in particular, was a very wet month, no less than 6·08 inches of rain falling; 24 days out of the 31 were wet. Rainy weather continued, more or less, throughout January and February, 1915, with the absence of frost, the mean temperature for these months being 39° F.

A drier period followed in March and April, and May was particularly dry, rain falling on two days only. The drought continued practically throughout the whole of June. In this latter month only 51 inch of rain fell and the crops suffered much in consequence. July, however, was very wet, but the rain came too late to do full benefit to the corn crops or to enable the root crops to recover. It was, however, instrumental in giving an excellent aftermath of grass. The harvest months of August and September were very "catchy," showery days alternating with spells of dry weather.

Notwithstanding the fact that the Woburn soil is a very light one, wheat, which had made a good start in winter, was enabled to withstand the summer drought, and was a better crop than usual. Barley, on the other hand, suffered very severely, and the yield was small over the whole farm. There was considerable difficulty in growing root crops, and the hay crop was also decidedly short, though a good aftermath was obtained through the rain that fell in July, and also a good second "cut" of "seeds."

CONTINUOUS GROWING OF WHEAT (*STACKYARD FIELD*, 1915 (39TH SEASON)).

After the crop of 1914 had been removed, efforts were continued to get rid of the coltsfoot which had of late years been making its appearance, more especially on plot 4 (mineral manures only).

On October 10, 1914, farmyard manure was applied to plot 11b and ploughed in. The manure was analysed before application and was found to contain .814 per cent. of ammonia. Accordingly, to supply the necessary 100 lb. of ammonia, the manure was applied at the rate of 5 tons 9 cwt. 2 qrs. 24 lb. per acre.

The land was ploughed October 17—20, and on October 27 "Red Standard" wheat was drilled at the rate of 10 pecks per acre, the seed having previously been dressed with sulphate of copper. Mineral manures were put on the same day (October 27), on the plots to receive them.

The wheat was quite three weeks in showing, but, when it came up, it was quite a good plant, and there appeared to be more growth than usual on plots 8a and 8b, which are generally nearly bare.

In February, 1915, the farmyard manure plot, as usual, looked much the best, while plot 2bb was superior to 2b, the additional application of lime showing, as usual, in the early stages.

On April 9, rape dust was applied to plot 10b. This manure contained 4.75 per cent. of nitrogen, and the quantity applied, in order to give 25 lb. of ammonia, was 433.6 lb. per acre.

On May 26 the first halves of the top-dressings of sulphate of ammonia and nitrate of soda were applied to plots 3a, 8a, 8aa, and 9a, the second halves being given on June 4 to these plots and also to plots 2a, 2aa, 2b, 2bb, 3b, 5a, 5b, 6, 10a, and 11a.

It was noticeable in June that plot 5a, which received the smaller dressing of sulphate of ammonia with mineral manures but without lime, was surprisingly good, and not much inferior to 5b, which had received in addition 1 ton of lime in 1905. From this it would appear that the lime originally in the soil has not yet disappeared on this plot.

The wheat crop somewhat recovered with the rain of July, and on August 19 it was ready to cut, being threshed out in the field on August 27 direct from the "stook." The corn was dressed and weighed on September 24, being subsequently (February, 1916), valued by Mr. T. Smith, Junr., of Bedford.

After harvest it was noticeable that spurry had begun to come in on the nitrate of soda plots. There were also more thistles and coltsfoot on the plots 6 and 9 (nitrate of soda applied) than elsewhere. Coltsfoot still showed on plot 4 and also on the farmyard manure plot (11b) together with thistles.

The results are given in Table I., page 322.

The crop generally was a great improvement on that of 1914 when the unmanured produce was only 5½ bushels per acre. It was very similar to that of 1913.

The unmanured produce was, on the average of the two plots (1 and 7), 12.9 bushels of corn with 10 cwt. 1 qr. 12 lb. of straw.

Mineral manures alone (plot 4) gave about a bushel per acre less corn, but with rather more straw.

Sulphate of ammonia used alone gave a little corn round the edges of the plots, but nothing worth recording. Where lime had been given in addition, at the rate of 2 tons per acre in December, 1897 (but none since), a crop equal to that of the unmanured produce was obtained. The application of 5 cwt. of lime per acre at four different times yielded an increase of 2 bushels on the unmanured produce, while the further repetition of 2 tons of lime per acre in 1905, making 4 tons in all, showed, for the first time in these experiments, an increase on the single application of lime (plot 2b), and a gain of $2\frac{3}{4}$ bushels over the unmanured plots.

Sulphate of Ammonia used along with minerals but without lime (plot 5a) gave a surprisingly good result, and a much better one than previously. The produce was only $1\frac{1}{4}$ bushels less than on plot 5b where 1 ton of lime per acre had been given in addition in 1905, and was 6 bushels in excess of the unmanured produce. As a consequence of this, it has been decided not to lime this plot again as yet. Plot 5b (sulphate of ammonia with minerals and 1 ton per acre of lime) produced $7\frac{1}{4}$ bushels more than the no manure plots. Sulphate of ammonia used in double amount with minerals but without lime (plot 8a), gave, as usual, practically no crop, though on 8b, where sulphate of ammonia had been omitted for the year, and which is usually nearly bare, a crop very much above the ordinary was obtained. The same dressings together with 10 cwt. of lime per acre (plot 8aa) gave a crop somewhat less than that of the unmanured plot, showing that the lime applied in 1905 was not sufficient in amount. On plot 8bb, where the same lime had been given, but sulphate of ammonia had been left out for the year, there was a gain of $8\frac{1}{4}$ bushels over the untreated plot.

Nitrate of soda gave, on the whole, a better crop than sulphate of ammonia, no doubt on account of the dry season. Used by itself, the heavy dressing of nitrate of soda (plot 3a) gave $7\frac{1}{2}$ bushels more than no manure, the half-dressing (plot 3b) yielding $2\frac{3}{4}$ bushels less. Used along with minerals, the smaller dressing of nitrate of soda (plot 6) gave an increase of $6\frac{1}{2}$ bushels over the untreated plot, but was $\frac{3}{4}$ bushel below the corresponding produce when sulphate of ammonia was used in conjunction with lime (plot 5b). Applied in double amount (plot 9a) nitrate of soda together with minerals gave an increase of $5\frac{1}{2}$ bushels on the unmanured plot, the omission of nitrate of soda for the year (plot 9b) reducing the produce by 3.4 bushels.

As between plots 10a and 11a, the inclusion of phosphates produced 1 bushel more per acre than did the inclusion of sulphate of potash.

Lastly, farmyard manure (plot 11b) gave the highest crop of the year together with the most straw, the yield of corn being 11½ bushels more than on the unmanured plot. Rape dust (plot 10b) also did very well, giving the second highest produce of the series, and only 1 bushel per acre less than from farmyard manure, although the actual amount of ammonia applied was only one-fourth of that supplied in the farmyard manure.

The valuer reported that the chief fault in the wheats generally this season on the Woburn farm was the prominence of weak yellow corns, these giving a mixed appearance to the grain.

It is noticeable that the highest grades were obtained where nitrate of soda had been used (plots 3a, 9a, 10a), the corn being described as "very well grown wheats with plenty of strength and uniform in colour, being also in good condition."

It will further be observed that there was not the preponderance of "tail" corn which is generally found on these plots, following the application of nitrate of soda.

The grain from the sulphate of ammonia plots (2, 5 and 8) was hardly as well grown, and the wheats were weaker than from the nitrate of soda plots.

The unmanured plots (1 and 7) had a quantity of yellow corns and were badly grown; they would hardly do for milling purposes.

The farmyard manure corn (plot 11b) was only moderate, and that from rape (plot 10b) was rather the better.

CONTINUOUS GROWING OF BARLEY (*STACKYARD FIELD*) 1915 (39TH SEASON).

One alteration in the general plan was introduced in 1915. This was the division of plot 4 (minerals only) into two halves, the one (4a) being treated as before, but on the other half (4b) one ton of lime per acre was applied in March, 1915, with the object of seeing what lime would effect when used on the land without nitrogenous manures.

The first ploughing of the land was done September 30—October 7, 1914, and the second ploughing March 11—13, 1915.

It was noticed during the winter that the colour of the land that had been continuously dressed with nitrate of soda was very different to that where sulphate of ammonia had been used. The winter, as already observed, was one of very heavy rain,

TABLE I.—*Continuous Growing of Wheat, 1915*
(33th Season).

(Wheat grown year after year on the same land, the manures being applied every year.)

Stackyard Field—Produce per acre.

Plot	Manures per acre	Head corn		Tail corn	Straw, chaff, &c.	Value per quarter on basis of 60s.
		No. of bush.	Weight per bushel	Weight		
			Lb.	Lb.	C. q. lb.	s. d.
1	Unmanured	12.8	62.9	15	10 3 5	58 0
2a	Sulphate of ammonia (= 25 lb. ammonia)	—	—	—	—	—
2aa	As 2a, with 5 cwt. lime, Jan., 1905, repeated 1909, 1910 and 1911	15.0	66.0	16	11 2 5	59 0
2b	As 2a, with 2 tons lime, Dec., 1897	12.8	64.6	16	8 3 27	59 0
2bb	As 2b, with 2 tons lime (repeated), Jan., 1905	15.7	64.0	16	11 1 17	58 6
3a	Nitrate of soda (= 50 lb. ammonia)	20.4	63.9	22	14 1 17	60 0
3b	Nitrate of soda (= 25 lb. ammonia)	17.6	64.0	12	13 0 5	59 0
4	Mineral manures (superphosphate, 3 cwt.; sulphate of potash, 1 cwt.)	11.7	63.0	16	11 2 4	59 0
5a	Mineral manures and sulphate of ammonia (= 25 lb. ammonia)	19.0	62.2	34	15 0 2	59 0
5b	As 5a, with 1 ton lime, Jan., 1905	20.3	63.9	28	13 3 4	59 0
6	Mineral manures and nitrate of soda (= 25 lb. ammonia)	19.5	63.6	11	14 2 13	59 0
7	Unmanured	13.1	63.0	13	9 3 19	58 0
8a	Mineral manures and (in alternate years) sulphate of ammonia (= 50 lb. ammonia)	—	—	—	—	—
8aa	As 8a, with 10 cwt. lime, Jan., 1905	10.9	64.0	36	10 1 8	59 0
8b	Mineral manures, sulphate of ammonia (= 50 lb. ammonia) omitted (in alternate years)	11.0	62.0	24	9 0 7	58 6
8bb	As 8b, with 10 cwt. lime, Jan., 1905	21.3	62.5	44	16 0 21	59 0
9a	Mineral manures and (in alternate years) nitrate of soda (= 50 lb. ammonia)	18.5	63.2	32	15 2 9	60 0
9b	Mineral manures, nitrate of soda (= 50 lb. ammonia) omitted (in alternate years)	15.1	63.0	24	11 2 23	59 0
10a	Superphosphate 3 cwt. nitrate of soda (= 25 lb. ammonia)	18.9	63.2	26	13 1 20	59 6
10b	Rape dust (= 25 lb. ammonia)	23.2	63.5	16	15 2 13	59 0
11a	Sulphate of potash 1 cwt., nitrate of soda (= 25 lb. ammonia)	17.8	63.9	12	13 2 12	59 0
11b	Farmyard manure (= 100 lb. ammonia)	24.4	63.1	16	19 3 21	58 6

TABLE II.—Continuous Growing of Barley, 1915
(39th Season).

(Barley grown year after year on the same land, the manures being applied every year.)

Stackyard Field—Produce per acre.

Plot	Manures per acre	Head corn		Tail corn	Straw, chaff, &c.		Value per quarter on basis of 58s.	
		No. of bush.	Weight per bush.	Weight				
			Lb.	Lb.	C.	q.	lb.	s. d.
1	Unmanured	9.1	52.6	31	8	1	18	50 0
2a	Sulphate of ammonia (=25 lb. ammonia)	—	—	—	—	—	—	—
2aa	As 2a, with 5 cwt. lime, Mar., 1905, repeated 1909, 1910 and 1912	4.7	54.0	16	4	0	0	53 0
2b	As 2a, with 2 tons lime, Dec., 1897, repeated 1912	6.8	56.0	24	7	3	6	53 0
2bb	As 2a, with 2 tons lime, Dec., 1897, repeated Mar., 1905	6.0	57.0	16	5	2	0	50 0
3a	Nitrate of soda (=50 lb. ammonia)	7.5	56.0	26	8	2	8	50 0
3b	Nitrate of soda (=25 lb. ammonia)	8.3	53.0	28	7	2	10	50 0
4a	Mineral manures	11.4	52.7	26	7	1	14	54 0
4b	As 4a, with 1 ton lime, 1915	19.1	53.6	40	11	2	10	54 0
5a	Mineral manures and sulphate of ammonia (=25 lb. ammonia)	—	—	—	—	—	—	—
5aa	As 5a, with 1 ton lime, Mar., 1905	7.8	54.0	28	7	1	26	50 0
5b	As 5a, with 2 tons lime, Dec., 1897, repeated 1912	14.7	53.7	53	10	3	18	53 0
6	Mineral manures and nitrate of soda (=25 lb. ammonia)	15.5	52.2	50	12	2	27	50 0
7	Unmanured	11.2	53.0	22	7	1	20	53 0
8a	Mineral manures and (in alternate years) sulphate of ammonia (=50 lb. ammonia)	—	—	—	—	—	—	—
8aa	As 8a, with 2 tons lime, Dec., 1897, repeated 1912	18.6	53.5	40	13	1	19	50 0
8b	Mineral manures, sulphate of ammonia (=50 lb. ammonia) omitted (in alternate years).	—	—	—	—	—	—	—
8bb	As 8b, with 2 tons lime, Dec., 1897, repeated 1912	13.4	56.0	28	10	0	0	53 0
9a	Mineral manures and (in alternate years) nitrate of soda (=50 lb. ammonia)	11.8	53.5	28	10	0	22	50 0
9b	Mineral manures, nitrate of soda (=50 lb. ammonia) omitted (in alternate years).	12.7	51.0	44	16	0	0	54 0
10a	Superphosphate 3 cwt., nitrate of soda (=25 lb. ammonia)	11.3	52.0	33	9	0	3	50 0
10b	Rape dust (=25 lb. ammonia)	7.4	54.0	33	7	1	9	50 0
11a	Sulphate of potash 1 cwt., nitrate of soda (=25 lb. ammonia)	13.5	53.0	43	10	3	12	50 0
11b	Farmyard manure (=100 lb. ammonia)	27.3	53.0	69	18	0	9	50 0

Superphosphate 3 cwt., sulphate of potash $\frac{1}{2}$ cwt.

Farmyard manure, as with the wheat, gave the heaviest yield of the whole series, namely 27·3 bushels per acre of corn, with 18 cwt. per acre of straw. Whereas in the case of the wheat there was only a difference of 1 bushel of corn per acre as between farmyard manure and rape dust, this difference was very strongly marked in the case of the barley, the yield with rape dust being very poor and 20 bushels per acre less than with farmyard manure.

As regards quality, the barleys were a very poor lot, and not nearly up to the average for the season. The valuer reported that the grain from one plot only (the unmanured one, plot 4) would, on account of its size, go for vinegar malt, and that from plot 2 would possibly—because of the high price of barley—do for black malt. All the others were only fit for “grinding barley.”

ROTATION EXPERIMENTS.—THE UNEXHAUSTED MANURIAL VALUE OF CORN AND CAKE (*STACKYARD FIELD*).

(a) *Series C.* 1910, *Swedes, fed on by Sheep with Corn and Cake respectively*; 1911, *Barley*; 1912, *Green Crops*; 1913, *Wheat*; 1914, *Swedes*; 1915, *Barley*.

The crop of swedes in 1914 was small and under the 12 tons per acre which it is usual to consume on the land by sheep: accordingly, roots had to be carted from other fields to make up the required amount.

On plot 1 (corn-fed plot) the roots were consumed along with 4 cwt. of barley and 4 cwt. of oats per acre and 2 cwt. of chaff; on plot 2 the same weight of roots was fed with 4 cwt. of linseed cake, 4 cwt. of cotton cake, and 2 cwt. of chaff per acre.

The sheep used took from January 23 to March 12 to eat up the roots. They began on the corn plot, then passing on to the cake plot. The land was ploughed immediately afterwards, and on April 1, “Chevalier” barley at the rate of 9 pecks per acre, was drilled, the seed having previously been dressed with sulphate of copper.

The barley began to show on April 18, but, owing to the extreme drought which followed in May and June, it suffered greatly and never was a good crop. It was ready for cutting on September 1, and on September 6 it was carted and stacked. Threshing was done on October 23, and on November 18 the corn was dressed and weighed.

The weights are given in Table III.

TABLE III.—*Rotation Experiment—the Unexhausted Manurial Value of Cake and Corn. Series C (Stackyard Field), 1915. Barley—after Swedes fed on.*

		Produce per acre.					
Plot		Head corn		Tail corn		Straw, chaff, &c.	Value of corn per quarter on basis of 58s.
		Weight	Bush.	Weight per bushel	Weight		
		Lb.		Lb.	Lb.	G. q. lb.	s. d.
1	Corn-fed plot	1,154	26.9	54.0	114	14 2 19	55 0
2	Cake-fed plot	1,321	24.5	53.9	129	14 1 27	54 0

It will be seen that the corn-fed plot produced 2.44 bushels more per acre than did the cake-fed plot, the straw, however, being much alike on the two plots. It is noticeable also that the proportion of "tail" corn was higher than usual. The results tended in exactly the same way as in 1911, when the corn-fed plot gave 4.7 bushels more than the cake-fed one. In then searching for an explanation of the unexpected result, I could only suggest that this might have been caused by the land being in wet condition when the cake was being fed on the plot, whereas it was dry during the corn-feeding. I thought that this might possibly have affected the soil and the subsequent cultivation. This was certainly, however, not the case in 1915, for there was nothing to choose between the weather during the two periods of feeding or in the condition of the land at the close.

Though the barley in this rotation experiment was far from being a good crop, a comparison of it with the barley grown on the continuous barley plots of the same field shows clearly how, in an unfavourable season, a crop suffers far more when under continuous cultivation than when grown in rotation. The rotation barley here gave a crop practically as high as the highest produce of the continuous barley plots (plot 11b, farmyard manure). It will also be noticed that the valuer put a higher figure on the grain of these crops than on any from the continuously grown plots. It was stated to be fairly well grown and matured.

(b) *Series D.* 1912, *Swedes fed on by sheep with Corn and Cake respectively*; 1913, *Barley*; 1914, *Green Crop (Mustard)*; 1915, *Wheat*.

It was only possible to grow one crop of mustard in 1914, the second crop, sown on October 8, never coming to any size. It was accordingly ploughed in during October, 1914,

and the land was prepared for wheat. On November 4, 1914, "Red Standard" wheat was drilled at the rate of 9 pecks per acre, the seed having previously been dressed with sulphate of copper. The wheat did not appear until December 3, after which it grew fairly, despite the subsequent drought. On August 19, 1915, the crop was cut, and on August 27-28 it was threshed in the field direct from the "stook." The corn was subsequently dressed, weighed and valued, and the results are given in Table IV.

TABLE IV.—*Rotation Experiment—the Unexhausted Manual Value of Cake and Corn. Series D (Stackyard Field), 1915. Wheat—after Green crop.*

		Produce per acre.							
		Head corn			Tail corn	Straw, chaff, &c.			Value of corn & straw, chaff, &c. on bushels of 60.
Plot		Weight	Bush.	Weight per bush.	Weight				
		Lb.		Lb.	Lb.	C.	q.	lb.	s. d.
1	Corn-fed Plot	999	15.9	62.7	101	13	1	26	59 0
2	Cake-fed Plot	1,114	17.6	63.1	127	16	0	18	59 0

Here, in the fourth crop of the rotation, the cake-feeding gave an increase of 1.7 bushels of corn and 3 cwt. of straw per acre over the corn-feeding. The valuer reported the grain to be well grown and uniform in colour, but lacking strength.

This wheat crop closed the first rotation of the new series on this land, and a summary of the crops grown during the four years gives the following :—

Year	Crop	Plot 1 Corn-fed plot	Plot 2 Cake-fed plot
		Produce per acre	Produce per acre
		T. c. q. lb.	T. c. q. lb.
1912	Swedes	16 13 0 0	14 0 2 23
1913	Barley	42.0 bushels	39.8 bushels
1914	Mustard (fed on) . . .		
1915	Wheat	15.9 bushels	17.6 bushels

The above table shows but little difference between corn-feeding and cake-feeding, as judged by the crops subsequently grown in the four years' rotation.

A similar comparison made in series C led to a like conclusion, or, rather, to a slight difference being shown in favour of the corn-feeding. At all events it is clear that, as the result of growing crops for four successive years on two adjoining blocks of land, on one of which corn has been fed with the roots and, on the other, cake, the differences that one would expect in favour of the cake-feeding have not been brought out. Further, it has to be remembered that this experiment was not one conducted on quite small plots, but on areas of two acres each where the sheep could be fed on the land under conditions such as those which would obtain in practice. In other words, the outcome of this experiment, so far, has been to indicate that when roots have been fed to sheep on the land, it is immaterial—judging by the crops subsequently grown in the rotation—whether corn or the same weight of cake has been given to them. Such a conclusion must, of course, not be rapidly come to, and a repetition of the entire experiment for another rotation is necessary. It cannot be denied, however, that this experiment tends to throw doubt upon whether one would obtain in practice the marked differences between cake-feeding and corn-feeding which one would be led to expect from theoretical considerations, such as have led to the drawing up of compensation tables for the unexhausted manurial value of different foods.

GREEN-MANURING EXPERIMENTS.

(a) *Stackyard Field. Series A.*

After the wheat crop of 1914 had been removed, the land was ploughed, for the first time, from September 14-18, 1914, and, for the second time, April 7-13, 1915.

On April 22, spring tares were sown at the rate of 10 pecks per acre. On May 17, mustard, 1 peck per acre, and rape, 5 lb. per acre, were also sown on their respective plots. The crops came up fairly and were duly fed on the land. The sheep began feeding the mustard on July 23, they receiving also $1\frac{1}{2}$ cwt. cotton cake per acre. On July 28 they went on to the rape, eating it with the same amount of cake, and on July 31 they similarly began to feed the tares, finishing on August 7, after which the land was ploughed.

Owing to unfavourable weather, it was impossible to take second crops of the tares, mustard, or rape.

(b) *Lansome Field.*

The second green crops were ploughed-in October 8-9, 1914, and on November 6, "Red Standard" wheat, at the rate of 8 pecks per acre, the seed having been previously dressed with sulphate of copper, was drilled. The corn appeared on

December 6. During the period of growth the rape plot looked decidedly the best, then the mustard plot, the tares plot throughout seeming the poorest. On August 17, 1915, the wheat was cut. It was carted on August 25, and the corn subsequently dressed and weighed. The results are given in Table V.

TABLE V.—*Green-Manuring Experiment (Lansome Field).*
Produce of Wheat per acre, 1915—after Green Crops.

Plot	Manuring in 1914	Head corn		Tail corn	Straw, chaff, &c.				Value of corn per quarter on basis of 60c.
		Weight	Bush.	Weight per bush.	Weight	C.	q.	lb.	
1	Tares ploughed in, with mineral manures	Lb. 1,062	16.6	Lb. 64.0	Lb. 36	13	1	16	58 6
2	Tares ploughed in, with lime	1,047	16.4	64.0	38	13	1	17	58 6
3	Rape ploughed in, with mineral manures	1,230	19.5	63.0	38	16	1	13	58 6
4	Rape ploughed in, with lime	1,176	18.5	63.5	37	16	0	2	58 6
5	Mustard ploughed in, with mineral manures	1,041	16.3	64.0	35	15	1	2	58 6
6	Mustard ploughed in, with lime	998	15.5	64.2	35	14	0	8	58 6

The rape plot, as shown in the growing crop, gave the highest return both in corn and in straw, it yielding 2 to 3 bushels per acre more than the tares plot. The mustard plot, though it had appeared better than the tares, did not turn out to be any better in corn, the straw, however, being more.

It may be remembered that in 1914 rape gave, similarly, the best crop in Stackyard Field.

Once more, accordingly, it has been shown that on light land like that of Woburn, the ploughing-in of leguminous crops, such as tares, does not give a return equal to that of the ploughing-in of a non-leguminous crop like rape or mustard.

In this connection it was thought well, after the wheat crop had been removed, to take samples of the top 9 inches of soil from each of the three plots, in order to see if any differences as regards contents of nitrogen were shown between the plots. Samples were accordingly taken, and these gave on analysis:—

(On dry soil:	Mustard plot	Rape plot	Tares plot
	per cent.	per cent.	per cent.
Organic matter (loss on heating)	2.48	2.34	2.61
Nitrogen (total)	.080	.078	.084
(In natural soil)			
Moisture	7.17	8.12	10.95

From these figures it will be seen that the tares soil contains slightly more vegetable matter and nitrogen than the other two, so that it would not appear that failure to produce equivalent corn crops on it is due to the tare soil containing less vegetable matter or nitrogen than the others. The higher amount of moisture in this soil is also worthy of notice.

INFLUENCE OF MAGNESIA ON WHEAT.

(*LANSOME FIELD*).

This was a repetition, in Lansome Field, of the experiments recorded in last year's report and carried out on Butt Furlong with wheat in 1914, the latter experiment itself following one with wheat in Lansome Field in 1913. In both 1913 and 1914 the wheat crop on the plots to which magnesia had been given had been much destroyed by the attacks of birds, which, for some unknown reason, seemed to have a predilection for this plot.

The comparative results in these two years were accordingly not trustworthy. At the same time certain definite distinctions were noted between the plot treated with magnesia and that left untreated. These were principally that on the treated plot the wheat crop was of a darker colour, tillered out much better, and gave a grain which was more glutinous in appearance and which proved to be richer in nitrogen than the untreated corn.

The repetition of the experiment in 1915 was fortunately unattended by the depredations of birds such as had ruined the previous returns, and, accordingly, a fair comparison was now afforded.

Two plots of $\frac{1}{20}$ acre each were marked out in Lansome Field: one of these was left untreated, and on the other 4 tons of ground magnesia per acre were spread on November 5, 1914. Analysis of the soil showed it to contain:—

Lime (CaO)	46 per cent.
Magnesia (MgO)	28 "

The magnesia used contained 67·92 per cent. of magnesia with 10·42 per cent. of lime.

Reckoning on the first 6 inches of soil, the application raised the percentage of magnesia to 57 and that of lime to 50, the ratio of lime to magnesia thus being altered from approximately 1·6 to 1·1.

On November 6, "Red Standard" wheat was drilled at the rate of 8 pecks per acre. At first the untreated plot looked the better, but by January, 1915, the plot treated with magnesia had come on and looked decidedly superior. The crop showed the same differences which had been observed in previous years, the wheat on the magnesia plot being darker in colour

and stronger and better tillered out than on the untreated plot. On August 17 the wheat was cut, and was threshed on August 27 in the field direct from the "stook." The results are given in Table VI.

TABLE VI.—*Magnesia on Wheat, 1915 (Lansome Field).*

Produce per acre.

Plot	Treatment.	Head corn		Tail corn		Straw, chaff, &c.		Value of corn per quarter on basis of 100.	
		Weight	Bush.	Weight per bushel	Weight				
		Lb.		Lb.	Lb.	C. q. lb.	s. d.		
1	Without magnesia.	1,210	18.8	66.0	30	14 1 14	59	0	
2	With magnesia . . . (4 tons per acre applied November, 1914).	1,620	25.6	63.2	30	18 3 5	59	6	

¹ Observations of Value.—

Plot 1. Not so well grown as Plot 2 and lacks strength, there being more yellow corns than on Plot 2.

Plot 2. Well-grown sample and well-matured. Still it contains a lot of yellow corns; on the other hand it contains some very fine wheat: a very mixed sample.

The appearances of the growing crop were fully borne out in the harvest results, the plot treated with magnesia yielding nearly 7 bushels more corn with $4\frac{1}{2}$ cwt. more straw per acre.

Determinations of the nitrogen in the corn gave the following figures:—

	Without magnesia.	With magnesia.
Percentage of Nitrogen . . .	1.66	1.83

Supplementary Experiment with Magnesia.

By the side of the plots mentioned in the foregoing experiment were those which had been used for the similar experiment in 1913. The wheat grown that year was followed in 1914 by a crop of mangolds. The whole field being now put in wheat, and the original plots being still marked out, it was thought that it might be of interest to see whether the magnesia applied in November, 1912, at the rate of 2 tons per acre, still produced any effect on the wheat crop. The magnesia was not applied again, but the cultivation of the wheat went on simultaneously with that described in the foregoing experiment. The harvest results are given in Table VII.

It will be noticed that, though the last application of magnesia was in the autumn of 1912, the wheat crop three years later showed still a slight advantage from the application of magnesia, there being a gain of nearly 2 bushels of corn and $1\frac{1}{2}$ cwt. of straw per acre. Together with this it has

to be remembered that the mangold crop of 1914 was also slightly superior where magnesia had been applied. There was, however, practically no difference in the nitrogen in the grain of the two plots, these giving respectively 1.57 and 1.55 per cent. of nitrogen.

TABLE VII.—*Supplementary Experiment—Magnesia on Wheat, 1915 (Lansome Field).*

		Produce per acre.									
Plot	Treatment	Head corn				Tail corn		Straw, chaff, &c.			Value of corn per quarter on basis of 60s.
		Weight	Bush.	Weight per bushel	Weight	Weight					
		Lb.		Lb.	Lb.	c.	q.	lb.	s.	d.	
1	Without magnesia	1,445	22.9	63	30	18	0	24	58	0 ¹	
2	With magnesia (2 tons per acre applied Nov., 1912)	1,550	24.6	63	45	19	1	14	58	0 ¹	

¹ Observations of Valuer—Both lots weak, yellow, and badly matured.

Milling and Baking Tests.

After the four crops just recorded—two with magnesia applied and two without—had been dressed and weighed, a portion of each lot was sent to Mr. A. E. Humphries, Coxes Lock Mills, Weybridge, Surrey, who had kindly promised, as before, to carry out milling and baking tests with the wheats. At his own request the samples were sent to him merely labelled A, B, C, and D, and without any indication of what each was.

A was from the old plot to which no magnesia was given in 1912.

B " " " Magnesia was given in November, 1912, at the rate of 2 tons per acre.

C " new " no magnesia was given in 1914.

D " " " magnesia was given in November, 1914, at the rate of 4 tons per acre.

Mr. Humphries' report was as follows:—"I have now completed the work of testing the four sample lots of wheat which you sent to me under the designations A, B, C, and D.

"The short answer is that for commercial purposes there is no difference between them, but if regard be paid to fine points of quality and details of investigation, the following statement can be made.

"*Appearance.* Before ascertaining how these wheats behaved in the mill and bakehouse, I had noticed that sample D contained a slightly higher percentage of translucent berries than A and B. There might be a still smaller increased percentage of such corns in C as compared with A and B, but I did not like the appearance of these translucent berries, and I should prefer, if

I were considering the fine points, the sample A to the other three.

"Bakehouse Tests. When I submitted all four to a standardised baking process suitable for such flours, using flour, water, salt and yeast only, and did the work in duplicate, I found no commercial difference between them, but the flour from sample D was slightly the worst. I noted, however, that all four yielded a somewhat deficient quantity of gas during fermentation, and when I took the steps necessary to remedy this, A and B derived benefit from the change, C and D did not, and of A and B, A was the better one. Under these modified conditions A was shown to be appreciably better than D, but I still think that for commercial purposes they are practically alike."

From this report it will be seen that though there were no great differences as regards milling and baking value between the four lots, Mr. Humphries inclines to favour the samples grown without magnesia. He notes that the immediate effect of applying magnesia (sample D) is to produce a more translucent berry, and this is reflected in my analysis of the grain, which shows D to contain 1.83 per cent. of nitrogen as against 1.66 per cent. in C (no magnesia applied). This more nitrogenous sample also gave the worst bakehouse test. The interval of time and the smaller amount of magnesia applied in 1912 seem also to have favoured the baking value.

If reference be now made to the last column in Tables VI. and VII. it will be observed that there are considerable divergencies between Mr. Humphries' estimates and those of our own valuer, the latter estimating the corn purely from the point of view of what it would fetch on the market. Whereas the latter put into grade 1 the new plot, to which magnesia had been applied in November, 1914, and considered it superior to that which had had no magnesia in 1914 (placed in grade 2), he only put into the 3rd grade, and at a lower figure, the sample A which Mr. Humphries held, on the whole, to be the best.

Accordingly, it would seem that, judged on its market value, wheat to which magnesia has been applied is likely to fetch a higher price, while for the miller and baker it is not found so advantageous.

WHEAT AFTER LINSEED.

Linseed has often been described as a very exhausting crop. It was decided to put this belief to a practical test, and as linseed had been grown on Great Hill in 1914, and an oat crop on land of a similar character immediately adjoining, the conditions were favourable for putting the question to the test by taking a wheat crop after the linseed and also after the oat crop and seeing what differences would result. The land on which linseed had been grown in 1914 was divided into two

parts. One of these was left untreated, and on the other, London dung, at the rate of 12 tons per acre, was applied in the autumn of 1914. The land was ploughed November 7—10, and "Red Standard" wheat, at the rate of 8 pecks per acre, was drilled on November 16, on the two plots following linseed, and also on the corresponding plot where oats had been grown in 1914.

The plot on which farmyard manure had been given appeared somewhat superior to the unmanured one, but that after oats was all along by far the poorest. The wheat was cut on August 17, stacked August 26, and subsequently dressed and weighed. The results are given in Table VIII.

TABLE VIII.—*Wheat after Linseed. Great Hill, 1915.*

Produce per acre.										
Plot	Crop	Head corn			Tail corn		Straw, chaff, &c.			Value of corn per quarter on basis of 60s.
		Weight	Bush.	Weight per bush.	Weight					
		Lb.		Lb.	Lb.	T. c. q. lb.				s. d.
1	After linseed, followed by 12 tons per acre London dung.	1,551	24.3	63.8	49	1 0 2 23				59 0
2	After linseed	1,586	24.6	64.4	49	0 19 1 14				59 0
3	After oats	784	12.1	65.0	26	0 9 2 11				59 0

As was observed in the field, the wheat after linseed proved a much heavier crop than that after oats. From this it would appear that the statements made as to linseed being an exhausting crop as compared with corn are not borne out. The wheat crop after linseed was just double that after oats.

It is somewhat remarkable that plot 1, to which the 12 tons of dung per acre had been applied after removal of the linseed crop, did not give more corn than where dung had not been applied, although during the period of growth this crop had looked somewhat the better. The increase was in the straw.

The wheats were described by the valuer as practically alike, and as useful samples of this year's wheat, but rather mixed, having some very good and strong grains and some weak yellow ones.

VARIETIES OF BARLEY (*ROAD PIECE*).

It was resolved to try again Swedish and Danish varieties of barley in comparison with an English variety. These experiments had been carried out in Butt Close in 1914, the

Danish variety, "Tystofte" giving that year 1 bushel per acre more corn than did the English variety "Archer's Stiff Straw"; the Swedish variety "Svalöf," though being much earlier than the others and apparently looking better, proved disappointing as regards yield.

These two varieties were again tried in 1915, the English variety grown by way of comparison being the ordinary "Chevalier" barley. This experiment was conducted in Road Piece Field. On April 10 the barleys were sown. The crops, owing to drought, were very poor. The early character of "Svalöf," which was so noticeable in 1914, did not now exhibit itself. The barleys were cut August 23—24 and carted August 27—31, being threshed and weighed on October 23. The results are given in Table IX.

TABLE IX.—*Varieties of Barley, 1915.*

Road Piece.—Produce per acre.

Plot	Variety	Head corn			Tail corn		Straw, chaff, &c.	Value of corn per quarter on basis of 38s.
		Weight	Bush.	Weight per bush.	Weight			
1	"Svalöf Primus" (Swedish)	Lb. 973	18.7	Lb. 52	Lb. 8.5	C. q. lb. 9 0 26	s. d. 56 0	
2	"Tystofte Prentice" (Danish)	1,317	25.2	52.2	7.5	11 3 21	56 0	
3	"Chevalier" (English)	2,019	38.1	53	15.5	18 2 2	54 0	

It will be seen that the "Chevalier" barley was much the best, producing 13 bushels more corn and 7 cwt. more straw per acre than any of the others. The "Svalöf" again was the poorest, and yielded 6.5 bushels less than the "Tystofte" variety.

The crops being below average this year, do not allow of very definite conclusions being drawn. In 1914 the Danish barley ("Tystofte") gave about a bushel more corn per acre than the English "Archer." Now it gave a very considerably lower yield. The Swedish ("Svalöf") variety, which in 1914 was nearly equal to "Archer," and was marked by its early maturity, now gave much the lowest yield of the three kinds grown.

The valuer reported both the Swedish and the Danish variety to be superior to the English, the last named being badly grown, badly matured, and full of black-ended tail corn. The "Svalöf" (Swedish) was the sounder sample of the other

two, being better harvested and of a shade better colour. It was not as ripe as the "Tystofte" (Danish) barley, which was quite a useful sample of the Chevalier type, being "kinder" and more uniform than the "Svalöf," with nice crease in the skin.

CLOVER AND GRASS MIXTURES.

Series B. Stackyard Field, 1915.

This experiment, on the value of the inclusion of "Wild" White Clover in seed mixtures, was continued. The mixtures had been laid down in the barley crop of 1912 on two plots in Stackyard Field, the only difference between the seedling being that on plot 1, 4 lb. per acre of "wild" white clover took the place of 4 lb. of "ordinary" white clover per acre sown on plot 2.

In 1913 and 1914 two hay crops were taken each year, the mixture with ordinary white clover giving a slightly greater weight of hay, the more creeping habit of the "wild" white clover not bringing it to the mowing-machine as readily as the ordinary white. A great difference, however, was seen in the aftermath, that of the "wild" white clover plot being far denser.

Side by side with these plots was one on which "Wild" Red Clover seed had been sown by itself in 1912.

The crops continued to do well in 1915: the first hay crop was cut on June 17, and carted on June 21, the second crops being cut on August 21 and carted on August 28. Of the "wild" red clover only one crop was obtainable. The weights of hay are given in Table X.

TABLE X.

Plot	Seeding	Weight of hay per acre											
		1st crop											
		2nd crop											
		1st crop				2nd crop				Total			
		T.	c.	q.	lb.	T.	c.	q.	lb.	T.	c.	q.	lb.
1	Mixture with "wild" white clover	1	2	1	7	1	2	0	21	2	4	2	0
2	Mixture with "ordinary" white clover	1	6	3	9	7	0	2	1	13	3	11	
3	"Wild" red clover alone				8	0	25						
													(one crop only)

It will be seen that, while, as before, the first crop of the ordinary white clover gave a higher weight than the "wild" white clover, in the second crops the "wild" white clover gave a much heavier return, this applying also to the total crop of the year.

Even more striking was the appearance of the plots after the hay crop had been taken, the "wild" white clover

presenting a dense carpet which was greatly admired by all those who inspected it; the ordinary white clover, on the other hand, showed blank spaces over the surface of the plot. There could be no question in the mind of any practical man which of the two plots would afford the better feeding. So good indeed was the aftermath—at least in the case of the “wild” white clover—that it was determined not to plough up the plots, but to leave them down for another year.

This experiment bears testimony to the great advantage to be derived from including “wild” white clover in a mixture, and it also shows that it is not only in the north of England (from whence the seed came and where the idea originated) that “wild” white clover will do well.

The “wild” red clover, having been grown by itself, did not afford a fair comparison with the other plots, but it may be recorded that it gave a similar close sward to that which the “wild” white produced. Following on the above, further experiments on the “wild” white and “wild” red clovers were begun in 1915.

VARIETIES OF LUCERNE.

Series B. Stackyard Field.

The different varieties had been sown in 1911, and so were now in their fourth year. The plots were horse-hoed in September, 1914, the plantain and the larger weeds being also pulled up.

By June, 1915, all were growing well except the Turkestan Lucerne, which was very poor. On July 15, the crops were mown, but, owing to wet weather, the lucerne hay could not be carted until June 29.

The second crops were cut on September 4, and carted September 10. The results are given in Table XI. The drought kept back the first crop so long that it was not possible to get more than the two crops this year.

TABLE XI.—*Varieties of Lucerne (Stackyard Field).*

Produce of Hay per acre, 1915.

Variety	Sown under a corn crop			Sown bare		
	1st crop	2nd crop	Total	1st crop	2nd crop	Total
	T. c. q. lb.	T. c. q. lb.	T. c. q. lb.	T. c. q. lb.	T. c. q. lb.	T. c. q. lb.
American (Arizona)	1 4 0 0	1 17 2 0	3 1 2 0	1 5 0 0	1 6 2 0	2 11 2 0
Canadian	1 19 0 0	1 19 0 0	3 18 0 0	1 19 2 0	1 18 0 0	3 17 2 0
Turkestan	—	0 35 2 0	0 15 2 0	—	0 15 0 0	0 15 0 0
Provenç	2 3 2 0	2 0 0 0	4 3 2 0	2 3 0 0	1 19 2 0	4 2 2 0
Russian (Europe)	2 7 0 0	1 15 2 0	4 2 2 0	2 10 2 0	1 14 2 0	4 4 6 0
Russian (Asia)	2 1 0 0	1 14 2 0	3 15 2 0	2 119 2 0	1 14 0 0	3 13 2 0
North American	2 3 2 0	1 17 0 0	4 0 2 0	2 3 0 0	1 15 2 0	3 18 2 0

As between sowing in a corn crop and sowing bare, the results of 1912 gave the better returns from sowing bare. This was also the case to some extent in 1913, but in 1914 this difference had disappeared. Now, again, but little difference was shown between the two methods, what little there was to choose being in favour of sowing with a crop. There is, further, the economic advantage with sowing in a crop, that one obtains also the corn and straw of the covering crop, this more than making up for the slight additional hay crop of the first regular season.

As between the different varieties, the Turkestan, which had never been good, was now practically done for, and the plot was ploughed up. It will be replaced in 1916 by Spanish lucerne. The Russian (Europe) variety, as in all the previous years, was again best, the Provence coming next and occupying the position formerly held by the Canadian lucerne, which latter, however, still remains good. The North American variety also showed much improvement.

It has been decided to leave these plots down for another year, with the exception—as above stated—of the Turkestan lucerne.

Three varieties of lucerne grown in America, and especially noted for their hardiness, were sent to Woburn and grown on small plots in Stackyard Field. The varieties were:—(a) Sterling's Montana, grown in Montana, 1914; (b) Sterling's N. Dakota, grown in N. Dakota, 1904; and (c) Grimm's Alfalfa, grown in the Northern States of America, 1914. The seed was sown at Woburn without a crop on May 23, 1915, but it is, of course, too soon yet to record any crop returns.

SUGAR BEET.

Experiments with sugar beet were continued in the season of 1915. The intention was to have this as a manurial experiment, the different applications being (a) dung 12 tons per acre, (b) Peruvian guano 4 cwt. per acre, (c) superphosphate 4 cwt., nitrate of soda 2 cwt. per acre, and (d) dissolved bones 1 cwt. per acre. Each manuring was to be in duplicate. The experiment was conducted in Warren Field, the soil of which is heavier than that of any other field on the farm.

The dung was spread on April 17, 1915, and the land ploughed April 17—20. The artificial manures were applied on May 19, and the sugar beet seed ("Klein Wanzleben") was drilled on the same day at the rate of 12 lb. per acre. The plant appeared on May 29. Hocking was continued throughout June, and singling was done June 21—30. The first top-dressing of nitrate of soda (1 cwt. per acre) was given to plot c on July 15, and the second on August 6. The crop grew

very unevenly, and there were numerous blanks on account of the dry weather. Finally the beet was pulled October 27—November 10. The weights obtained were, however, so uncertain and the duplicate plots so far from being confirmatory of one another, that it would be misleading to record them. It may, however, be said generally that the crop varied from 4 tons 6 cwt. to 9 tons 16 cwt. per acre. Determinations of the dry matter and the sugar were made in an average sample of the sugar beet crop, as also in an average sample of the adjoining mangold crop. The figures were:—

	Sugar Beet, per cent.	Mangold (Long Red), per cent.
Dry matter	20.47	11.80
Sugar	15.08	6.67

Inasmuch as mangolds were grown in the same field side by side with the sugar beet plots, it was possible to form a rough estimate of the labour required in lifting each crop. The sugar beet took just about three times what the mangolds did. Comparative returns were also made of the amount of earth, &c., which was retained relatively by the mangolds and the sugar beet. The crops were harvested in the usual way and put in clamps covered with straw and subsequently with earth. When the clamps were opened, 5 cwt. of each set of roots were taken and the roots washed and dried. The following were the respective losses of weight:—

	Sugar Beet, C. q. lbs.	Mangolds (Long Red), C. q. lbs.
Weight of Unwashed Roots	5 0 0	5 0 0
.. Washed Roots	3 1 6	4 2 7
Loss in washing	1 2 12	0 1 21
Percentage loss in washing	32	9

GRASS EXPERIMENTS.—*BROAD MEAD, 1915.*

(a) Improvement of Old Pasture.

(b) Varieties of Lime.

(c) Different Forms of Lime.

In 1915 Broad Mead was hayed, so that the results of the weighing of hay for the three sets of experiments in this field can again be recorded. The field was chain-harrowed in September, 1914, and again in March, 1915, this being followed by rolling. The grass was cut June 22—28, and the carting was finished by July 2.

(a) Improvement of Old Pasture.

No further manurial applications were made, the last having been given in February, 1913. The results of the weighings of hay are set out in Table XII., and along with them those of the botanical examination of the hay as carried out by Professor Biffen.

TABLE XII.—*Improvement of Old Pasture (Broad Mead).*

Produce of Hay per acre, with Botanical Results, 1915.

Plot	Manuring per acre in 1913	Weight of hay per acre	Percentage of		
			Grasses	Legumi- nouse	Weeds
		T. c. q. lb.			
1	Basic slag 10 cwt. Nitrate of potash 1 cwt.	1 0 1 0	94	4	2
2	Mineral superphosphate 5 cwt. Sulphate of potash 1 cwt.	19 3 0	96	2	2
3	Basic slag 10 cwt. Sulphate of potash 1 cwt.	1 3 1 0	91	8	1
4	No manure	18 3 0	92	4	4
5	Lime followed (in 1913) by— Superphosphate 3 cwt. Sulphate of potash 1 cwt.	17 1 0	91	8	1
6	Dung 12 tons	1 7 1 0	89	5	6

Farmyard manure (plot 6), as usual, gave much the biggest yield of hay, but here the herbage was much the coarsest of all. Stock when feeding on the field practically rejected this plot altogether. Plot 3, basic slag and sulphate of potash, gave decidedly the best return all round, leaving also a good aftermath. The smallest produce was given by plot 5, where lime, followed (in 1913) by superphosphate and sulphate of potash, had been given. This plot, though giving the smallest yield of hay, was the one most sought after by stock when feeding in the field, and it produced the finest quality herbage. Between the other manured plots there was little to choose.

An examination of the botanical results obtained by Professor Biffen shows that the highest percentage of leguminous plants occurred on plot 3 (basic slag and sulphate of potash) and on plot 5 (lime plot), and that the least weeds were present on these plots.

Superphosphate with sulphate of potash (plot 2) had not done as well as basic slag with sulphate of potash (plot 3), and the farmyard manure plot (plot 6) had by far the most "weeds." Plot 3 was evidently the best plot all round, while the lime plot (plot 5) produced the finest grazing. This was in accordance with what had been noticed when cattle were in the field.

Professor Biffen further reported that the grasses occurred in the following order of predominance:—Rye-grass, golden oat, sweet vernal, foxtail, Yorkshire fog, crested dogtail, meadow barley, rough-stalked meadow grass, hard fescue, cocksfoot (only traces). The clovers were:—White clover, perennial red, yellow vetchling; and the principal weeds were sorrel, buttercup, and chickweed.

(b) Varieties of Lime.

The weights of hay are given in Table XIII.

TABLE XIII.—*Varieties of Lime on Grass Land (Broad Mead).*

Produce of Hay per acre, 1915.

Plot	Lime applied, 1910 ¹	Weight of Hay per acre			
		T.	c.	q.	lb.
1	Buxton lime	0	19	3	0
2	Chalk lime	0	17	2	0
3	Magnesian lime	0	18	1	0
4	No lime	0	16	3	0
5	Lias lime	0	17	0	0
6	Oolite lime	0	16	2	0

¹ Two tons per acre in each case.

So far as the weights went, the Buxton lime produced the biggest yield, and it left an aftermath in no way inferior to any other plot. Oolite lime did not appear to have produced any benefit; lias lime was somewhat superior to it. Magnesian lime produced some benefit, and chalk, though giving little increase of hay, gave an aftermath perhaps the best of any.

(c) Different forms of Lime.

The results are given in Table XIV.

TABLE XIV.—*Different Forms of Lime on Grass Land (Broad Mead).*

Weights of Hay, per acre, in 1915.

Plot	Lime applied, 1913 ¹	Weights of Hay, per acre, in 1915.			
		T.	c.	q.	lb.
1	Lump lime	1	2	1	0
2	Ground lime	1	0	3	0
3	Nothing	0	18	2	0
4	Ground limestone	1	0	1	0
5	Ground chalk	1	2	2	0

¹ 20s. per acre (independently of carriage, cartage, &c.), was spent on each plot for the lime used.

In this experiment the best results in hay were obtained from lump lime (plot 1) and from ground chalk (plot 5), the other applications having also apparently produced some benefit. Between ground lime and ground limestone there was nothing to choose.

In this experiment it has to be remembered that the same money (20s. per acre) was expended on each plot.

GRASS EXPERIMENTS.—CHARITY FARM.

Shortly after this farm of 55 acres, and consisting entirely of grass land, had been acquired, it was determined to carry out an experiment to decide, if possible, a point upon which opinions are very variable, viz., whether grass land is better when continuously mown or when continuously grazed, or when alternately mown and grazed.

A large field ("Westbrook"), consisting of about 19 acres, of level character and well situated, was available for the purpose.

For the first year (1913) the whole field was hayed and the produce weighed on different portions of it so as to see that it was of sufficiently uniform character for experimentation. Professor Biffen also examined the herbage botanically and reported that the field was a suitable one for the purpose.

In 1914, basic slag at the rate of 7 cwt., and sulphate of potash, 1 cwt. per acre, were given over the whole area. The field was then divided into three equal portions: on plot 1 the first crop was to be always hayed, plot 2 was to be hayed one year and grazed the next, while plot 3 was to be always fed. The second crop in each case was to be fed by stock.

In 1914, plot 1 (always hayed) gave 1 ton 4 cwt. 3 qr. per acre of hay. The other two plots were grazed, and this formed the first year of the experiment proper.

In 1915, plot 1 was cut July 12—13, and plot 2, July 13—14, the hay of these being carted by July 21. The results are given in Table XV.

TABLE XV.—*Grass Experiment. Charity Farm, Westbrook Field.*

Plot		Produce of hay per acre, 1915.			
		T.	c.	q.	lb.
1	Always hayed	1	8	0	14
2	Alternately hayed and grazed	1	10	1	0

Plot 2 not only gave more hay, but it also left an aftermath which was of a much finer and better quality than was the case with plot 1. It also contained much more clover. Plot 3 (always grazed), while somewhat more uneven than plot 2, was also quite good and markedly better than plot 1.

RAINFALL.

Hitherto it has been the practice to record the rainfall as for the whole year, January to December, inclusive. A change

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is now introduced, the twelve months period being taken over what may be called the "farm season," October to September, inclusive, and so bringing it more into line with the experiments as here recorded.

RAINFALL AT WOBURN EXPERIMENTAL STATION, 1915.

(292 ft. above sea level.)

	Total Inches	No. of days with 0.1 in. or more recorded		Total Inches	No. of days with 0.1 in. or more recorded
1914.			March . . .	1.21	13
October . . .	3.28	12	April . . .	0.86	9
November . . .	2.22	18	May . . .	2.04	9
December . . .	6.08	24	June . . .	0.51	8
1915.			July . . .	4.59	18
January . . .	2.68	19	August . . .	1.71	15
February . . .	2.76	18	September . . .	1.97	9
			Total	29.91	172

POT-CULTURE EXPERIMENTS, 1915.

I. The Hills' Experiments:—

(a) The influence of Strontium Salts on Wheat.

(b) The influence of Boron Compounds on—

(1) Wheat.

(2) Barley.

II. The relation of Lime to Magnesia in Soils.

(a) The use of Caustic Magnesia and Carbonate of Magnesia compared.

(b) The use of Caustic Lime and Carbonate of Lime compared.

III. Acidity of Soils. Stackyard Field, Continuous Barley, 1915.

IV. Experiments on "Humogen" (bacterised peat).

V. Phonolit and Ground Felspar as sources of Potash.

I. *The Hills' Experiments—(a) The influence of Strontium Salts on Wheat.*

Strontium being an element not previously dealt with at the Woburn Pot-Culture Station, and but little being known

about its action on plants, it was determined to institute experiments with it. The following salts were made use of:—The sulphate, nitrate, hydrate, chloride, and carbonate. Following on the general lines employed in these experiments, the salts were first applied in quantities supplying the element strontium in two different amounts, namely, .05 per cent. and .10 per cent. when reckoned on the whole of the soil used. The soil was taken from one of the fields of the farm and was of light and by no means rich character.

The strontium salts were intimately mixed with the whole of the soil contained in a single pot. Earthenware pots holding 40 lb. each were used and each experiment was in duplicate. After the filling of the pots in the usual manner, twelve seeds of wheat were sown in each pot on November 28, 1914. By December 14 the first plants appeared.

In respect of germination, retarding effects were noticed with the nitrate and the chloride, but not with any of the other salts. With the nitrate all the plants eventually came, but in the case of the chloride only nine plants out of the twelve came up with the heavier application (.10 per cent. strontium), and this salt had evidently, in this quantity, a toxic effect.

The plants were thinned out on March 16, 1915. In regard to their subsequent growth it may be said generally that the sulphate, hydrate, and carbonate sets presented much the same appearances as did the untreated plants. The only differences that were shown were with the nitrate and the chloride, and these are well exemplified by Plates 1 and 2, which show the growing crops.

In the case of the nitrate the plants showed better tillering, greater strength and darker green colour. The sets to which .05 per cent. of strontium had been applied as nitrate were, however, distinctly superior to those with the heavier dressing.

The effects, however, were generally those which would be expected from the application of an active nitrogenous manure, and in the case of the .10 per cent. application the dressing of nitrogen was doubtless too heavy.

The plants to which strontium chloride had been given were, from the start, behind the others. In the early stages they had a weakly appearance and a bad colour, this being the more marked with the heavier dressing, the leaf tips of the plants being in this case distinctly injured. The plants improved towards the end of May, and the colour got distinctly better. Later on, however, the apparent increase in size of crop disappeared, and again signs of injury appeared, more particularly with the heavier dressing.

The crops were cut on August 21, and in Table I. are given the comparative results.

TABLE I.—*Strontium Salts on Wheat, 1915.*

		Corn	Straw
No treatment		100	100
Strontium sulphate containing .05 per cent. strontium	.05	84.6	81.7
" " " " .10 " " "	.10	83.8	80.5
" nitrate " " .05 " " "	.05	431.5	367.6
" " " " .10 " " "	.10	222.4	215.1
" hydrate " " .05 " " "	.05	104.1	94.6
" " " " .10 " " "	.10	101.9	97.6
" chloride " " .05 " " "	.05	106.3	96.1
" " " " .10 " " "	.10	45.1	56.7
" carbonate " " .05 " " "	.05	100.9	92.0
" " " " .10 " " "	.10	111.2	102.3

It will be noticed from Table I. that, with the exception of the nitrate, there was but little increase of crop. There appears to have been a slight stimulus with the carbonate, but this is hardly beyond experimental error. The chloride clearly affected the germination, even when supplying only .05 per cent. of strontium. When applied in the higher amount, it was distinctly toxic, this latter being the one clear case of toxic influence in the series, although there would seem to be some small indication of this in the case of the sulphate also. For practical purposes it may be said that the sulphate, hydrate, and the carbonate were without influence, and that what increase was given with the nitrate was due to the nitrogenous manuring. It is noticeable that the straw, though much heavier in the case of the nitrate, was shorter in length than in the untreated set, and also that a short straw was yielded with the heavier amount of chloride.

The general conclusions may be stated as follows :—

1. That strontium in the form of the sulphate, the hydrate, and the carbonate, is, when given up to .10 per cent., practically without effect either on the germination of the seed or the increase of the crop.
2. That strontium used in the form of nitrate of strontium produces an increase of crop, but that this cannot be attributed to the presence of strontium.
3. That strontium applied as strontium chloride has a retarding effect on germination, and, when used in quantity approaching .10 per cent. of strontium, has a distinctly toxic effect.

(b) *The Influence of Boron Compounds on Wheat and Barley.*

(1) *The influence of Boron Compounds on Wheat.*

From the known preservative effects possessed by Boron compounds, it was quite expected that some interesting facts might be gathered from applying them to plants, and it was accordingly determined to test, in the first instance, the influence of these bodies upon a wheat crop.

The two commonest compounds, boric acid (H_2BO_3) and borax ($Na_2B_4O_7$) were selected. The experiments were carried out in earthenware pots holding 40 lb. of soil each, the soil being of light nature and taken from one of the fields of the Woburn Farm. The quantities first used were, as in the case of the experiments on strontium salts just recorded, .05 and .10 per cent. of the element as reckoned on the whole contents of each pot, the materials being intimately mixed with the whole of soil used in each pot. The experiment was in duplicate throughout.

Twelve seeds of wheat were sown on November 16, 1914. The plants came up quite well in the untreated set, but in none of the others did any vestige of plant appear.

After waiting for six weeks, wheat was again sown in these latter, but once more it refused to grow.

It was clear, therefore, that boron, used to the extent of .05 per cent. entirely prevented the germination of the seed.

A fresh start was made: the pots were refilled, and the same forms, namely boric acid and borax, were used, but in quantities supplying only .02, .01 and .005 per cent. of boron respectively.

Wheat was sown on January 25, 1915. In the untreated pots all the plants came, but with the .02 and the .01 per cent. there were no plants at all, while with the .005 per cent. only two sickly plants appeared in each pot. Though these were kept on until July, first one and then the other disappeared.

It was clear, therefore, that Boron, if used to the extent of .005 per cent. was toxic.

Meanwhile a further set of experiments was commenced with much smaller quantities of the compounds than before. Starting with .001 per cent. as the highest amount, the others of the series were .0005, .00025 and .0001 per cent. respectively, in the two forms of boric acid and borax.

Twelve seeds of spring wheat were sown on April 20, 1915. In the case of the boric acid there was no clear case of retardation of germination and practically the whole of the plants came.

With borax, however, all the applications seem to have somewhat delayed the germination, though eventually practically all the plants appeared.

During the first month, the growth—where higher quantities of the compounds had been used—showed injurious effects, the leaf tips withering and the leaf becoming much spotted, the plants being altogether weaker than the untreated ones. This was especially marked with the .001 per cent., and less so with the .0005 per cent. The effect was still apparent with .00025 per cent., but in the case of .0001 per cent. the plant was as good as the untreated. The plants were then thinned out to six in each pot. They seemed to get over the effects noted above, and during the next month (June) the only set to show any sign of injury was the .001 per cent. one. Plate 3 illustrates the appearance of the crops when boric acid was used. The appearances were much the same with borax, but rather more marked, especially with .001 per cent. of borax.

As the crops ripened it was apparent that those to which .0001 and .00025 per cent. had been given were much like the untreated. The .0005 per cent. set ripened more slowly, and the .001 per cent. set remained green even longer.

The crops were cut on September 8, and in Table II. are given the weights of corn and straw. Owing, however, to the late sowing and other causes which interfered with the experiments, it is not right to draw any close comparisons.

TABLE II.—*Boron Compounds on Wheat, 1915.*

	Weight of	
	Corn	Straw
	Grammes	Grammes
No treatment	6.61 ¹	24.17
Boric acid containing .001 per cent. boron	3.23	15.92
" " " .0005 " " " "	12.89	25.95
" " " .00025 " " " "	13.63	30.42
" " " .0001 " " " "	12.33 ²	29.38
Borax		
" " .001 " " " "	2.74	15.08
" " .0005 " " " "	10.64	32.39
" " .00025 " " " "	14.00	29.28
" " .0001 " " " "	18.37	31.10

¹ These plants were damaged by birds, this accounting for the low produce of grain.

² This set was also attacked to some extent by birds.

From the earlier experiment it was shown that .005 per cent. of boron, or anything above it, was fatal to the crop, and now from this further experiment it was made clear that boron to the extent of .001 per cent. used either as boric acid or as borax, had a decidedly injurious effect, this being rather more marked with borax. In amounts, however, not exceeding .0005 per cent., it appeared that boron could be safely used, and indeed would even seem to have a stimulating effect.

(2) *The Influence of Boron Compounds on Barley.*

When as described in the last section, it was found that 100 per cent. of boron prevented the growth of wheat, whereas the plants came up with the 0.01 per cent. (though this latter amount subsequently proved toxic), it was thought desirable to institute further trials, previous to undertaking more extended ones on barley, in order to ascertain where the point lay at which actual germination was prevented. Accordingly a small trial was made with boric acid only, not for the obtaining of a crop, but merely to see whether the plants came up or not.

It being too late to sow wheat, barley was put in instead. The plan was as follows:—

2	pots untreated.					
2	"	with boric acid containing .004 per cent. boron.				
2	"	"	"	"	.003	"
2	"	"	"	"	.002	"

The barley was sown on May 14, and it was found that only the higher quantity (004 per cent.) actually interfered with the germination. But though, with this exception, practically all the plants came up, they were all of them weak in the case of the treated pots.

No progress was made with the '004 per cent. and '003 per cent. plants; the '002 per cent. grew at first rather better, but the plants gradually died off one after another, and by July 8 there were only two plants out of the twelve left in the '004 per cent., three in the '003 per cent., and seven in the '002 per cent. After this, the plants still continued to go off, and by August 24 there was only one small plant left in all the treated lots, and this one produced no corn.

It was accordingly made clear that a concentration of over .003 per cent. of boron will hinder germination, and that if as much as .002 per cent. of boron occurs in soils, plants will not come to anything.

The detailed experiment on barley with boron in the form of boric acid and borax was next undertaken.

Boron was used, as in the case of wheat, in quantities varying from '001 to '0001 per cent., the several applications being as follows:—'001, '0005, '00025 and '0001 per cent. The pots and soil used were similar to those used in the wheat experiment and were duplicated. Barley was sown on April 20. Germination was slightly delayed where '001 per cent. of boron in either form had been used, but this was not the case with the other dressings, and eventually practically all the plants came. But very shortly the tips of the leaves in all the treated sets began to show withering, and the leaf became spotted. By the end of May all the treated sets were covered

with brown spots, these being more numerous as more boron was used. The untreated plants, however, remained free from any withering or spotting.

As regards size, the '001 per cent. plants were distinctly affected, the '0005 per cent. ones slightly so, but the rest were as good as the untreated. After thinning out the plants in June, the '001 and the '0005 plants became more and more ragged, the '00025 and the '0001 being much like the untreated, though perhaps rather darker green in colour. The spotting of the leaves similarly increased in the treated lots. Much the same appearances were obtained with borax, though these were here even more accentuated. The '001 plants were very backward in ripening, especially in the case of the treatment with borax, and there was similar delay with the '0005 plants. Plate 4 gives the appearances of the crops to which borax had been applied.

The crops were cut on September 8. The results are given in Table III. It will be noticed from this and Plate 4 that the weight and length of straw were not diminished by the applications, but that there was a marked difference in respect of the corn. The plants with '001 per cent. as boric acid only gave 17 per cent. of the untreated crop, and the same amount of borax reduced the yield to 3 per cent. There was an adverse effect also with '0005 per cent. in both cases, the yields being 88 per cent. with boric acid and 62 per cent. with borax. After this, however, a slightly stimulating effect was produced, that is, when either was used at the rate of '00025 per cent. or '0001 per cent. of boron.

TABLE III.—*Boron Compounds on Barley—1915.*

						Corn	Straw
No treatment	.	.	.	.	.	100	100
Boric acid containing	'001 per cent. boron	.	.	.	.	17.1	112.8
"	"	"	"	"	"	88.3	115.3
"	"	"	"	"	"	106.6	109.2
"	"	"	"	"	"	103.5	101.0
Borax	"	"	"	"	"	2.9	86.1
"	"	"	"	"	"	62.6	122.2
"	"	"	"	"	"	114.7	98.0
"	"	"	"	"	"	119.8	109.0

Putting together the several results obtained in these experiments with wheat and barley, the following conclusions may be drawn :—

1. Germination is retarded when anything over '003 per cent. of boron is used, and even '001 per cent., more especially with borax, seems to delay germination.

2. Anything over .001 per cent. of boron, either as boric acid or borax, will prevent plants from developing and forming grain.

3. A toxic influence is shown with .0005 per cent. of boron, but with quantities not exceeding .00025 per cent. there is a slightly stimulating effect.

4. The effects generally are more marked with borax than with boric acid.

A comparison of the two sets of experiments made in 1915, namely on strontium salts and on boron compounds, will show how very differently various elements behave towards plant life.

It has been the custom in the past rather to ignore the presence and influence of these, so-to-say, "out of the way" bodies.

But it must now be admitted that the Hills' Experiments have at least shown not only how marked is the influence that some of these bodies possess, but how very variable is that influence.

Upon what the differences turn it is impossible at present to say, but it has been made abundantly clear that a large field exists for the plant physiologist, in order to ascertain exactly at what stage, and in what manner the influence is shown, and how the different parts of plants are variably affected.

Taking the work of 1915 alone, the fact has been brought out that, while strontium can be used with impunity up to .10 per cent., a toxic influence is produced with boron if used at the rate of .0005 per cent. or $\frac{1}{2000}$ th only of the former amount.

II. *The Relation of Lime to Magnesia in Soils.*

Since the year 1909 experiments have been continuously conducted at the Pot-Culture Station on this subject, and the results have been regularly recorded in the pages of this Journal.

A soil rich in magnesia was obtained from Hereford and the effect has been observed of adding to it successive quantities of lime until, from magnesia being in excess, lime has come to be so.

The general result has been to show that lime could be added with benefit to a soil rich in magnesia, and that this addition could be carried on even to the extent of the lime being double the magnesia in amount. This particular lot of soil having now been used for several years, it was thought desirable to get a new supply and to repeat the experiment, while also extending it in certain directions.

The new supply of soil was obtained from as nearly as possible the same place as before. It was found, however, on analysis, to be not quite the same in composition, for, whereas the original soil contained CaO .85 per cent., MgO 2.29 per cent., the new supply contained CaO 1.06 per cent., MgO 1.89 per cent.

During the progress of the earlier series of experiments, other problems had suggested themselves, one of these being the possible influence of causticity (or alkalinity) as shown in the use of a substance such as caustic lime. As has been noticed already, there was reason to think that plot 2bb of the continuous wheat experiments in Stackyard Field had suffered from the application of a heavy dressing—4 tons per acre at one time—of caustic lime. The produce of this plot was at first diminished, and it was some years before it seemed to get over the effect of the application. Accordingly it was determined to try, not merely the application of caustic lime, but simultaneously that of carbonate of lime giving the same amount of lime (CaO). In comparison with this soil and the addition to it of lime in one form or other, there was put a soil of different character—a Woburn field soil—in which lime was in excess of the magnesia, and to it magnesia was added in the two forms of caustic magnesia and carbonate of magnesia.

The supply of soil being limited, it was unfortunately not possible to conduct as extended a series with this soil as with the Woburn soil. The soil was dried, sifted, and after calculation of the required amounts of lime in the two forms, these amounts were intimately mixed with the whole of the soil in the several pots. Magnesia and carbonate of magnesia were similarly mixed in the case of the Woburn soil. Of the Hereford soil there were six pots forming the experiments, duplicates not being possible. Of the Woburn soil there were nine pots. The following shows the plan of experiment:—

Hereford Soil. (CaO 1.06 per cent.; MgO 1.89 per cent.)			Woburn Soil. (CaO .23 per cent.; MgO .07 per cent.)		
1. Natural Soil	CaO 1.06 per cent.		1. Natural Soil	MgO .07 per cent.	
2. CaO added, to	.. 1.89	..	2. MgO added to	.. .115	..
3. " " " "	.. 3.78	..	3. " " " "	.. .23	..
4. CaCO ₂ " " "	.. 1.89	..	4. " " " "	.. .345	..
5. " " " "	.. 2.835	..	5. " " " "	.. .46	..
6. " " " "	.. 3.78	..	6. MgCO ₂ " " "	.. .115	..
			7. " " " "	.. .23	..
			8. " " " "	.. .345	..
			9. " " " "	.. .46	..

The lime used contained 94.55 per cent. CaO, the chalk 99.15 per cent. CaCO₂ (containing CaO 55.52 per cent.). The caustic

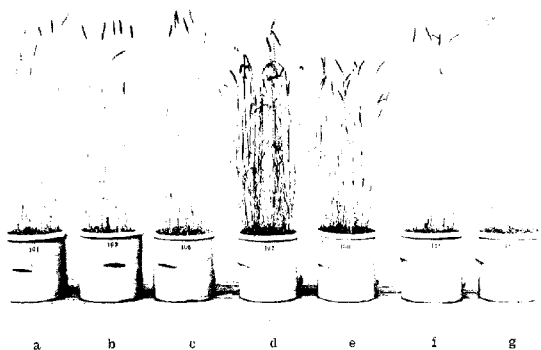


PLATE 1.—Strontium Salts on Wheat. Season 1915.

(a) No treatment; (b) Strontium (.05 per cent.) as Sulphate; (c) Strontium (.10 per cent.) as Sulphate; (d) Strontium (.05 per cent.) as Nitrate; (e) Strontium (.10 per cent.) as Nitrate; (f) Strontium (.05 per cent.) as Hydrate; (g) Strontium (.10 per cent.) as Hydrate.

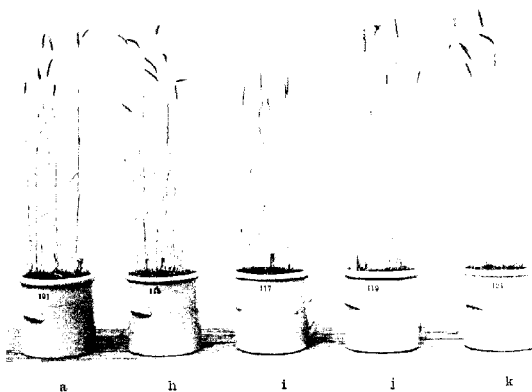


PLATE 2.—Strontium Salts on Wheat. Season 1915.

(a) No treatment; (h) Strontium (.05 per cent.) as Chloride; (i) Strontium (.10 per cent.) as Chloride; (j) Strontium (.05 per cent.) as Carbonate; (k) Strontium (.10 per cent.) as Carbonate.

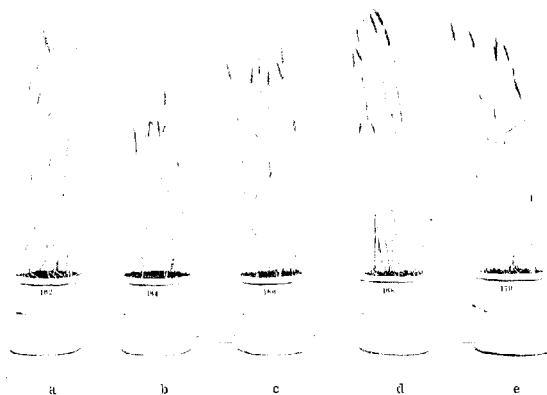


PLATE 3.—Boric Acid on Wheat. Season 1913.

(a) No treatment; (b) .001 per cent. of Boron as Boric Acid; (c) .0005 per cent.; (d) .00025 per cent.; (e) .0001 per cent.

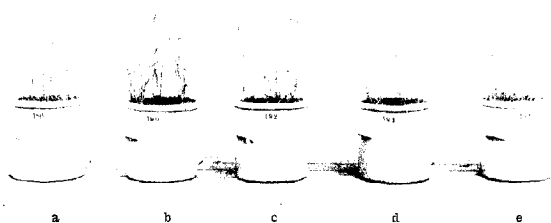


PLATE 4.—Borax on Barley. Season 1913.

(a) No treatment; (b) .001 per cent. of Boron as Borax; (c) .0005 per cent.; (d) .00025 per cent.; (e) .0001 per cent.

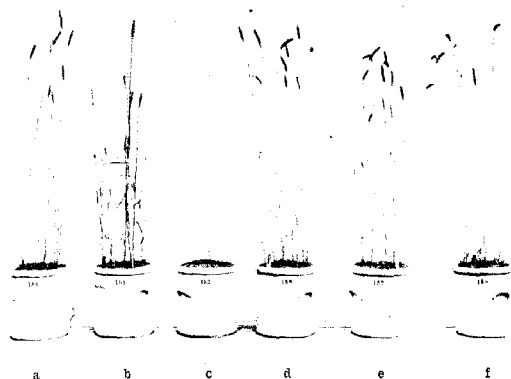


PLATE 5.—Herford Soil. Season 1915. Lime added to a soil richer in Magnesia.
 (a) Natural soil (CaO 1.06 per cent.; MgO 1.89 per cent.); (b) CaO added, to 1.89 per cent.; (c) CaO added, to 3.78 per cent.; (d) CaO₂ added, to 1.89 per cent.; (e) CaO₂ added, to 2.835 per cent.; (f) CaO₂ added, to 3.78 per cent. CaO.

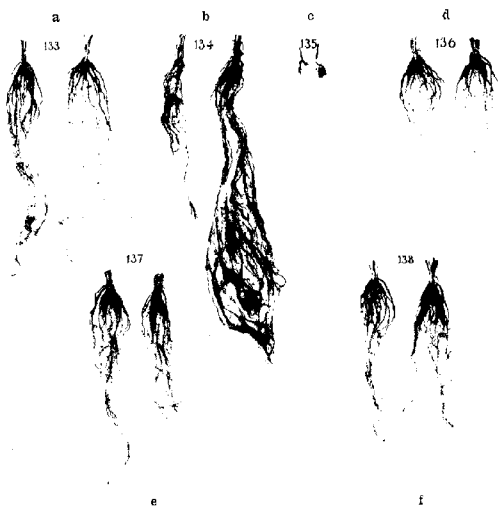


PLATE 6.—Herford Soil. Season 1915. Lime added to a soil richer in Magnesia.
 Roots of plants a-f in Plate 5.

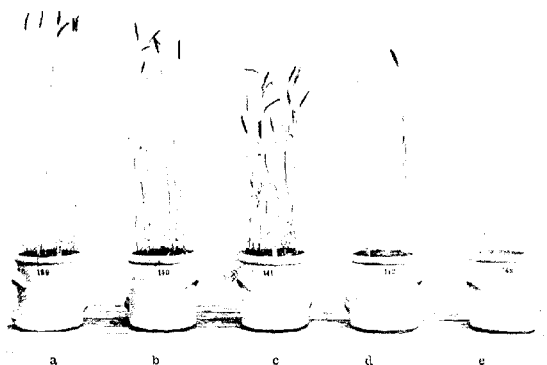


PLATE 7.—Wolurn Soil. Season 1915. Magnesia added to a soil richer in Lime.
 (a) Natural soil (CaO .23 per cent.; MgO .07 per cent.); (b) MgO added, to .315 per cent.; (c) MgO added, to .25 per cent.; (d) MgO added, to .350 per cent.; (e) MgO added, to .36 per cent.

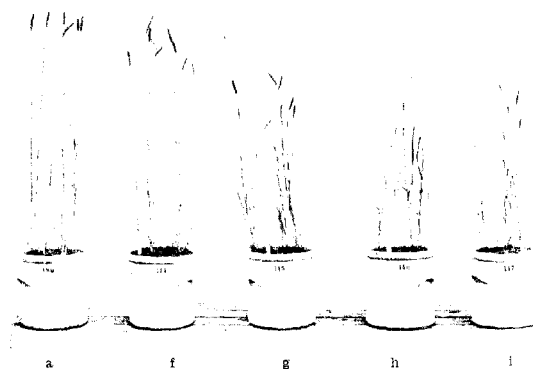


PLATE 8.—Wolurn Soil. Season 1915. Carbonate of Magnesia added to a soil richer in Lime.
 (a) Natural soil (CaO .23 per cent.; MgO .07 per cent.); (f) MgCO_3 added, to .355 per cent. MgO ; (g) MgCO_3 added, to .25 per cent. MgO ; (h) MgCO_3 added, to .335 per cent. MgO ; (i) MgCO_3 added, to .36 per cent. MgO .

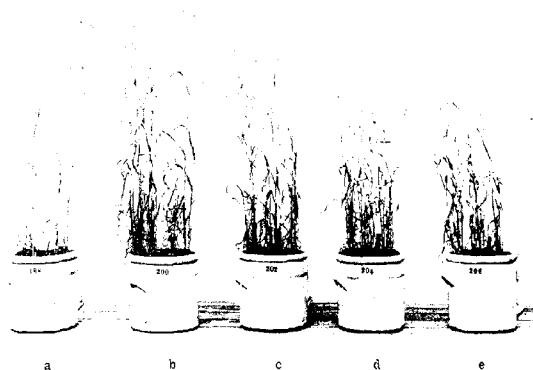


PLATE 9. Experiments with "Humogen" (bacterised Patk.). Oats, 1915.
 (a) No treatment; (b) "Humogen" 1:9; (c) "Humogen" 1:19; (d) Nitrate of Soda,
 "Humogen" 1:9; (e) Nitrate of Soda, "Humogen" 1:19.

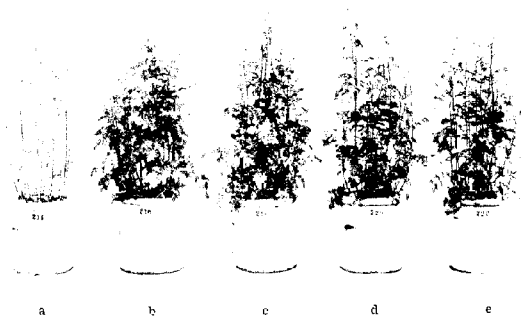


PLATE 10. Experiments with "Humogen" (bacterised Patk.). Mustard, 1915.
 (a) No treatment; (b) "Humogen" 1:9; (c) "Humogen" 1:19; (d) Nitrate of Soda,
 "Humogen" 1:9; (e) Nitrate of Soda, "Humogen" 1:19.

magnesia contained 87.59 per cent. MgO, and the carbonate of magnesia 88.98 per cent. MgCO_3 (containing MgO 42.37 per cent.).

(a) Hereford Soil.

Twelve seeds of wheat were sown on December 15, 1914. The germination was satisfactory in the case of pots 1 and 2, but in pot 3 (heavy dressing of CaO) no plant appeared until February 3, only four plants in all ultimately coming up. The blanks were then filled in by re-sowing.

In the case of the pots to which carbonate of lime had been added, although there were some signs of retardation of germination, practically the full number of plants eventually appeared.

On March 25 the plants were thinned out. Throughout the period of growth the 1.89 per cent. CaO plants made progress inferior to the untreated, while the 3.78 per cent. CaO plants were very sickly. All the sets treated with carbonate of lime, however, did well, showing no signs of failure and being superior to the untreated; the flag was darker in colour and stronger in growth. The 3.78 per cent. CaO plants gradually withered away and produced no crop. The appearances are shown in Plate 5. The crops were cut on August 23, and the comparative results are given in Table IV.

TABLE IV.—Hereford Soil—Season 1915.

(Soil contains CaO 1.06 per cent.; MgO 1.89 per cent.)

	Corn	Straw	Percentage of Nitrogen in Grain
Natural soil	100	100	1.24
CaO added, to 1.89 per cent.	48.8	88.4	2.46
" " " 3.78	..	1.6	..
CaCO_3 added, to 1.89 per cent. CaO	122.5	119.0	1.24
" " " 2.835	137.1	116.2	1.21
" " " 3.78	124.9	105.1	1.24

From these results, carried out, it will be remembered, for the first year of the new soil, it would appear that the causticity of the lime had a decidedly adverse effect, for, whereas there was a decrease of crop where CaO was added even to the point where CaO and MgO were equal in amount, and that a total failure ensued when this was exceeded, the same amounts of lime were quite well used in the form of carbonate of lime, and in every case gave an increase of crop.

The further conclusion might be drawn that lime may be added in considerable excess of the magnesia present, provided it be put on in the form of carbonate of lime and not as caustic

lime. The roots of the plants from the several pots were taken up after the crops were cut; they were then washed, prepared and photographed. The appearances are shown in Plate 6. The tendency to "featheriness" in growth was very marked in the case of the 1.89 per cent. CaO set, whereas all the three sets treated with carbonate of lime were quite healthy.

The nitrogen was determined in the grain, and the figures are given in Table IV. It will be noted that the high nitrogen went along with the "feathery" root (1.89 per cent. CaO), whereas when the root was normal the nitrogen was the same as in the natural soil.

(b) *Woburn Soil.*

In this case, where lime was originally in excess of magnesia, magnesia was added in the two forms of caustic magnesia and carbonate of magnesia. This series went on simultaneously with that just described. In one case only—the highest quantity of magnesia as such (.46 per cent.)—was germination adversely affected, only four plants out of the twelve coming up. The gaps were then filled in by re-sowing. During the period of growth the first two additions of magnesia showed a decided increase over the natural soil, and did not produce the injurious effects which had been noted in the previous case on the addition of caustic lime. But as soon as the magnesia exceeded the lime in the soil, then an immediate injurious effect was produced, and the two higher additions of magnesia practically destroyed the crop. This is well shown in Plate 7.

With the use of carbonate of magnesia in place of caustic magnesia there was similar increase with the first addition (.115 per cent. MgO), but, after this, as the magnesia was increased so the crop diminished. These appearances are shown in Plate 8. The comparative results are given in Table V.

TABLE V.—*Woburn Soil—Season 1915.*

(Soil contains CaO .23 per cent., MgO .07 per cent.)

	Corn	Straw	Percentage of Nitrogen in Grain
Natural soil	100	100	1.27
MgO added, to .115 per cent.	115.4	118.3	1.27
" " " .23 " "	191.4	172.5	1.36
" " " .345 " "	22.3	16.4	2.05
" " " .46 " "	—	—	—
MgCO ₃ added, to .115 per cent. MgO	121.1	126.7	1.27
" " " .23 " "	64.0	76.8	2.08
" " " .345 " "	28.6	51.1	2.52
" " " .46 " "	25.1	56.1	2.24

These results come out somewhat differently to those obtained by the addition of lime to the magnesia-rich Hereford soil. In the first place the influence of causticity is not noticeable until the magnesia is in marked excess of the lime. On the other hand, there is, with the addition of carbonate of magnesia, a steady decline as more magnesia is used. It must be admitted at once that these results are contradictory, as there would appear to be no reason for magnesia, when used as carbonate up to .23 per cent. MgO , proving harmful while the same amount used as caustic magnesia did not. It is unfortunate that it was not possible to conduct these experiments in duplicate so as to check any possibly anomalous results, and it would be well to repeat this work before drawing definite conclusions, especially as they are not in harmony with the results of earlier work (see Journal R.A.S.E., 1912, pp. 325-338).

The increase of nitrogen in the grain as the crop decreased will be observed.

III. *Acidity of Soils and Lime Requirements.*

Stackyard Field, Continuous Barley, 1915.

In 1914 an enquiry was started on this subject, the objects and method pursued being described at length in Journal R.A.S.E., 1914, pp. 315-318, together with the first year's results. Briefly it may be repeated that soil was taken from certain plots of the continuous barley experiments in Stackyard Field, some of them being acid and lacking in lime, and others having had lime applied to them. Dr. Hutchinson, of the Rothamsted Experimental Station, had kindly determined in each of these the acidity and had given the amount of lime, as carbonate of lime, required (as calculated) to neutralise this acidity. Carbonate of lime was then applied to that extent and also to 50 per cent. beyond this, and crops of barley were grown in order to see how far the lime applied effected the benefit expected. It may be said generally that the results of 1914 showed that when acidity was sufficiently marked to prevent a crop growing properly, then lime in excess of the quantity required to neutralise the acidity could with advantage be employed, but that, so long as the land grew a fair crop, addition of lime even to neutralising point was not called for: whilst where no acidity was shown, further liming was thrown away.

The experiments were continued for a second year, the soil, after removal of the 1914 crop, being turned out and aerated, and then replaced, and a second crop of barley taken, no further addition of lime being made.

Barley was sown on April 14, 1915—twelve seeds per pot—the plants being subsequently thinned out to six per pot. There was no failure of crop, and the plants grew steadily, and the crops were cut on August 31, giving the results set out in Table VI.

TABLE VI.—*Acidity of Soils, Starkeyard Field. Continuous Barley, 1915.*

Plot	Manuring in field	Treatment with carbonate of lime	Weight	
			Corn	Straw
			Grammes	Grammes
1	Unmanured	Untreated	6.10	9.02
		Neutralised	6.75	10.35
		Excess lime	8.10	10.65
2a	Sulphate of ammonia	Untreated	3.0	1.40
		Neutralised	6.45	10.95
		Excess lime	10.60	12.75
2bb	Sulphate of ammonia with 4 tons of lime per acre	Untreated	7.02	8.40
		Neutralised	5.60	8.25
		Excess lime	9.70	11.02
5a	Sulphate of ammonia and mineral manures	Untreated	2.25	8.05
		Neutralised	6.22	8.30
		Excess lime	6.82	9.15
5b	As 5a, but with 4 tons of lime per acre	Untreated	7.70	8.05
		Neutralised	7.65	8.85
		Excess lime	7.65	10.85
8aa	Mineral manures, sulphate of ammonia (double-dressing), and 4 tons of lime per acre	Untreated	9.04	10.40
		Neutralised	11.45	12.17
		Excess lime	11.35	14.45

The results in general followed very fairly those of 1914, though the crops, being those of a second year, were smaller. Some few anomalies—which the existence of duplicate pots would have enabled one to check—presented themselves, as e.g. plot 2bb, neutralised, and plot 5a, excess lime, which one would have expected to be higher. On the whole, however, the results were much on the lines of the former conclusions.

Plot 1 showed that lime was needed and could be beneficially applied in excess, this, however, not having been brought out in 1914.

Plot 2a confirmed the 1914 result that, with this very acid soil, lime should be used in excess.

Plot 2bb is open to some question, as there seems no reason for the neutralised soil giving lower results than the untreated.

Plot 5a is another instance of an acid soil producing a very small crop without lime.

Plot 5b, already limed in the field, shows clearly that no more lime is required.

Plot 8aa, though limed in the field in 1912, would seem—probably owing to the double dressing of sulphate of ammonia—to require further liming.

IV. Experiments on "Humogen" (Bacterised Peat).

Whereas the "humogen" or "bacterised peat" of Professor W. B. Bottomley is spoken of as a "new material," and the desirability of experimenting with it is being urged, on grounds of national importance, by the Board of Agriculture and other public bodies, it appears to be entirely forgotten—or ignored—that experiments have been conducted with it at Woburn for the past two years. Already the Journal of the R.A.S.E. for the year 1914 has contained a long account of the work done with "humogen," while accounts of experiments with earlier inoculating materials introduced by Professor Bottomley have been contained in the respective Journals for 1908, 1909 and 1910. It might well be urged on those now advocating the extended trial and use of the "new discovery" that they should read at least what has already been done at Woburn.

I now proceed to put out the results of last year's experiments with "humogen."

Professor Bottomley kindly sent me, early in 1915, a supply of "humogen" for experimental purposes. On arrival it was found that there were two different lots, one a good deal drier and less fibrous than the other, the latter being moister, darker in colour, and more resembling peat litter. Analysis of the two lots gave the following results:—

	Drier sample	Moister sample
Water	51.49	71.42
Organic matter	25.66	22.30
Mineral matter	22.85	3.28
	100.00	100.00
Total nitrogen	1.19	1.38
Nitrogen soluble in water . . . . .	.08	.48

It will be seen that there were considerable differences between the two lots, more especially in regard to the moisture and the soluble nitrogen, the moister sample being much the richer in the latter constituent. For this reason it was employed in the Pot Experiments in preference to the drier sample.

Professor Bottomley advised the use of the "humogen" in two different proportions, namely, 1 part to 9 of soil and one part to 19 of soil, each taken according to bulk and not to weight.

The "humogen" was mixed with the soil, the mixture forming the top 6 in. in each pot.

In the pots employed the quantities of "humogen" used were 1 lb. per pot for the 1:9 treatment, and $\frac{1}{2}$ lb. for the 1:19. The ordinary Woburn soil was employed, and it may be said that the amounts of "humogen" used worked out respectively at 35.6 tons and 17.8 tons per acre.

It was proposed to ascertain how the nitrogen made available in the peat by Professor Bottomley's process compared in effect with that obtained from nitrogenous materials, such as nitrate of soda, supplying nitrogen in an available form. For this purpose a comparison was made on the basis of the soluble nitrogen in either material. The equivalent—in terms of the soluble nitrogen contained—of 1 lb. of the moister "humogen" was found to be 13.34 grammes of nitrate of soda, equivalent to a dressing of 20.9 cwt. of nitrate of soda per acre for the 1:9, and of 10.45 cwt. per acre for the 1:19 treatment. The amount of nitrate of soda being so large, it was decided to put it on at intervals during the growing of the plants, in four equal dressings. The crops selected were oats, peas, and mustard.

(a) *Oats.*

The seed was sown on April 27, 1915. There was no apparent difference as regards germination in any case. For the first month, however, the heavier dressing of "humogen" seemed to have an adverse action and to somewhat scorch up the plants. Later on, this effect disappeared. The dressings of nitrate of soda were applied on May 21, May 27, June 3, and June 5.

The peat-treated plants tillered out much better than the untreated ones, these latter, on the other hand, being considerably taller, but more stalky. The appearances are brought out in Plate 9.

The crops were cut on August 23, and the comparative results are given in Table VII.

TABLE VII.—*Experiments with "Humogen" (Bacterised Peat). Oats, 1915.*

	Corn	Straw
No treatment	100	100
"Humogen" 1:9	118	233.1
" 1:19	131	189.6
Nitrate of Soda = "humogen" 1:9	119	175.2
" " " 1:19	127.7	170.1

It will be seen that there was a small increase of corn by the "humogen" treatment in both cases, but that this was no more than that produced by an equivalent amount of soluble nitrogen in the form of nitrate of soda. It cannot therefore be said that there was any increase of grain more than was due to the nitrogen actually supplied originally. In other words, there was no increase of corn resulting from any nitrifying action produced in the soil by the use of the bacterised peat.

On the other hand, the increase of straw (the green portion of the crop) was very marked, and was in excess of that produced by the nitrate of soda.

(b) Peas.

Nitrate of soda not being a suitable top-dressing for a leguminous crop like peas, this was omitted, and the two treatments with "humogen" were compared merely with untreated soil. The experiments were in duplicate.

Nine seeds were sown in each pot on April 27. The germination with the "humogen" treatment was, however, not satisfactory, and the peas seemed to rot in the soil.

In each of the untreated pots seven plants came up, but with the treated ones only four plants appeared, and re-sowing had to be done.

At first the treated plants were inferior to the untreated, but, later on, the former grew much better and seemed to be the more vigorous. The pods appeared earliest in the untreated set. The crops were cut on August 23, and the comparative results are given in Table VIII.

TABLE VIII.—*Experiments with "Humogen" (Bacterised Peat). Peas, 1915.*

	Corn	Straw
No treatment	100	100
"Humogen" 1:9	87.4	231.5
" 1:19	124.4	185.6

The results are not at all uniform, and cannot be considered satisfactory, inasmuch as the duplicates did not agree at all well, probably owing to the uneven germination.

It is therefore not advisable to draw any conclusion as regards the weight of corn, but it may be observed that the same point as was brought out in the case of oats, namely, the increase in the green portion of the plant, was very marked.

(c) Mustard.

Twenty seeds were sown in each pot on April 27, 1915. The germination was quite regular in all the lots. The nitrate of soda dressings were given, as with the oats, in four equal applications. The young mustard plants to which peat treatment had been given seemed at first somewhat scorched, but, later on, they picked up and grew very vigorously, giving very luxuriant foliage of rich green colour, and being altogether much superior to the plants in the untreated soil. The latter all along retained a more stalky and less "bushy" appearance. The nitrate of soda plants were similarly much superior to the untreated but were not the equal of the peat sets. The appearances are shown in Plate 10.

The first green crop was cut on June 21, just as the pods were beginning to form. A second crop was then sown. This was cut on August 20 and a third lot sown on September 3, and cut December 3. The second and third crops showed, though in less measure (the crops being smaller), the same relative appearances as did the first. The results are given in Table IX, and it may be said that throughout this experiment the duplicates agreed very well.

TABLE IX.—*Experiments with "Humogen" (Bacterised Peat). Mustard, 1915.*

	1st Crop	2nd Crop	3rd Crop	Total	Total	Percentage	
	(green weight)	(green weight)	(green weight)	(green crop)	(dry weight)	Green	Dry
	Grms.	Grms.	Grms.	Grms.	Grms.		
Natural soil	106.46	42.10	37.30	185.86	43.49	100	100
"Humogen" 1:9	713.85	189.52	64.70	968.07	175.04	526.8	402.5
"Humogen" 1:19	575.14	109.99	32.00	717.04	133.76	385.8	307.5
Nitrate of soda =							
"humogen" 1:9	515.27	163.58	37.72	716.57	144.98	385.5	333.4
Nitrate of soda =							
"humogen" 1:19	481.30	59.54	38.05	578.89	111.94	311.4	257.4

In this experiment a very clear advantage was gained by the peat treatment, this being more as the proportion of peat was increased. The crop, whether taken on the green or on the dry weights, was from three to five times the untreated, and the increase was in each case more than with the corresponding amount of nitrogen as nitrate of soda, though this, in turn, gave from $2\frac{1}{2}$ to 3 times the weight of the untreated crop.

It would, therefore, seem that in the case of a quickly growing green-crop like mustard, there is a gain from the use

of "humogen," and one more than can be accounted for by the soluble nitrogen supplied.

Putting together the results from the three crops grown this season, it would seem that, while there is no advantage to be derived from the use of "humogen" for grain production, it may fairly be said that, as regards the green parts of the plant, or a green-crop such as mustard, a marked benefit may be shown, so long, at least, as the plants are grown under conditions of greenhouse-cultivation and where they can be regularly watered and tended.

(d) *Field Experiment with "Humogen."*—Oats, 1915.

Simultaneously with the Pot-culture experiments just recorded, another was made on a field scale, the plots in question being $\frac{3}{40}$ ths of an acre each. One of these plots was left untreated, and to the others applications from the two different deliveries of the Bottomley peat preparation were given at the rate of 5 cwt. per acre.

The experiment was carried out in Road Piece Field. The first ploughing of the land took place in January, and the second ploughing February 2-5, 1915. On April 9 "Abundance" oats were sown at the rate of 4 bushels per acre. The new crop appeared by April 24. On April 29 the top-dressings of Bottomley's peat preparation were applied. During the course of the season little or no difference could be seen between the untreated and the treated portions. Owing to the drought the crops were very poor, the soil being very light and dry. The oats were cut August 23-24 and carted September 8. The results are given in Table X.

TABLE X.—*Field Experiment on "Humogen" (Bacterised Peat), Road Piece. Produce per acre—Oats, 1915.*

	Head corn		Tail corn		Straw, &c.		
	Weight	Bushels	Weight per bushel	Weight	C.	q.	lb.
1. No treatment	Lb.		Lb.	Lb.	C.	q.	lb.
	537	16.7	33.2	47	11	0	25
2. "Humogen" (dry sample) 5 cwt. per acre	427	13.1	32.7	53	10	2	21
3. "Humogen" (moist sample) 5 cwt. per acre	680	21.5	31.5	53	12	0	19

As regards the drier sample of "humogen"—this containing, it will be remembered, only .08 per cent. of soluble nitrogen—

the produce was below that of the untreated land both in corn and in straw.

The moister sample—which had 48 per cent. of soluble nitrogen—gave results somewhat better than did the untreated soil, both corn and straw being higher. The increase in green produce was, however, nothing like that shown in the case of the crop grown under greenhouse conditions, and it is clear that if any real benefit is to be obtained, the “humogen” must be used in much larger quantities than 5 cwt. per acre. It may, of course, be the case that the very dry season of 1915 told much against success in the field.

The great differences between the two lots of “humogen,” the one dry and the other moist, point to the likelihood of considerable variations occurring in the preparation of the material, with corresponding uncertainty in the results.

Putting together the conclusions to be formed from the Pot-culture experiments and from those conducted in the field, the position may, I consider, be fairly stated thus :—

Under conditions such as those obtaining in greenhouse cultivation, and where plants can be regularly watered and tended, a good preparation of “humogen” may produce a very marked increase in the growth of the green parts of plants and in the growing of green-crops, but it will show practically no benefit in the production of grain.

Under natural conditions of crops growing in the open, it has not as yet been established that, as regards the ordinary corn crops of the farm, any advantage is likely to accrue from the use of “humogen” when used in quantity such as a farmer is likely to be able to afford.

V. *Phenolit and Ground Felspar as sources of Potash.*

In the years 1911 and 1912 experiments were conducted at the Pot-culture Station with the view of ascertaining whether the potash contained in certain refractory minerals could be utilised by plants. The work so far done had yielded no satisfactory results, and the figures were, in consequence, not published.

In view, however, of the shortage of potash salts occasioned by the War, it was felt very desirable to again try this experiment. Phenolit and felspar (from Canada), both very finely ground, were the materials tried, and these were used both alone and with admixture of caustic lime. The experiments were in duplicate. Wheat was sown on December 8, 1914, and all the plants came up well. Moreover, they showed no differences that were noticeable during the period of growth,

though the soil used was a very light one and poor in potash. The crops were cut on August 23, and the comparative yields are given in Table XI. The duplicates agreed very well.

TABLE XI.—*Phonolit and Felspar on Wheat, 1915.*

		Corn	Straw
1	No treatment	100	100
2	Phonolit, 10 cwt. per acre	93.7	96.7
3	{ Phonolit, 10 cwt. } { Lime, 10 cwt. } "	98.9	103.3
4	Lime, 10 cwt. "	102.0	103.9
5	Felspar, 10 cwt. "	97.1	96.4
6	Felspar, 1 ton "	96.4	98.0
7	{ Felspar, 1 ton } { Lime, 10 cwt. } "	111.9	101.2

None of these results, except possibly the last, are beyond the range of experimental error. The minerals by themselves gave no increase, and, when used in conjunction with lime, it is doubtful if the seeming benefit in the single case of the heavier application of felspar is really more than such as is due to the lime itself. It is proposed to continue enquiries with these minerals in view of the growing need for new sources of potash supply.

J. AUGUSTUS VOELCKER.

1 Tudor Street, E.C.

AGRICULTURAL RELIEF OF ALLIES COMMITTEE.

What the Fund has accomplished.

THE Agricultural Relief of Allies Fund, which was initiated by the Royal Agricultural Society of England, seeks to assist in the re-establishment of agriculture in the countries of our Allies which have been devastated by the war. It has already been the means of providing invaluable relief in the areas devastated by the Germans in their retreat after the battle of the Marne.

The assistance sent comprises the following stock, implements and seeds, consigned to the French Government, who, through their permanent official agricultural inspectors, have distributed them to the most deserving cases:—61 rams, 11 boars, 2 goats, 2,800 head of poultry, 20 binders, 6 threshing machines, 10 harrows, 50 ploughs, 20 cultivators, 15 drills, 800 sacks of seed wheat, 2,200 sacks of seed oats, and 800 sacks of seed potatoes.

The French Government renders an official return of the destination of every item of relief, and the English Government transports all donations free. A minimum of expense is therefore incurred.

Prior to the German invasion of Serbia the Committee had despatched a Special Commissioner who presented a detailed report as to agriculture and destitution in that country, which will be of material assistance when the time is opportune to provide adequate help. As a result of his visit steps were taken to assist the peasants by purchase of oxen, but the sums remitted to Serbia for that purpose were not expended and were returned, on the threat of the second invasion, to this country where they now remain earmarked for the purpose of Serbian relief.

In the meantime the Committee is completing its organisation and raising funds so that it may be in a position to afford relief, the instant the opportunity occurs, in all invaded countries of our Allies.

The struggle for our safety as a nation and as an Empire is being fought on the lands of the agriculturists of France, Belgium, Poland, and Serbia, who have indeed sacrificed all they had for the common Allied cause. The Committee, therefore, confidently looks to British farmers to make the fund adequate, not only for dealing with the situation which will arise immediately after the war, but for dealing with it on a scale which will reflect honour on the farmers of this country and add still further to their traditional generosity to those in distress.

The Committee would greatly welcome assistance in the promotion of gift sales in agricultural districts. Offers of such help should be sent to the Hon. Secretary, 16 Bedford Square, London, W.C.

Royal Agricultural Society of England.

(Established May 9th, 1838, as the ENGLISH AGRICULTURAL SOCIETY, and incorporated by Royal Charter on March 26th, 1840).

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1897	ROGERS, C. COLTMAN, <i>Stanage Park, Brampton Bryan (South Wales).</i>
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1913	SEWARD, Capt. PERCY W., <i>Wesdon, Peterfield (Hampshire).</i>
1907	SMITH, FRED, <i>Deben Haugh, Woodbridge (Suffolk).</i>
1891	STANYFORTH, Lt.-Col. E. W., <i>Kirk Hammerton Hall, York (Yorks. W.R.).</i>
1912	STRACHIE, Lord, <i>Sutton Court, Pensford (Somerset).</i>
1907	TINDALL, C. W., <i>Wainfleet, S.O. (Lincolnshire).</i>
1916	TRANT, BROOKING, <i>Trethawle, Liskard, (Cornwall).</i>
1904	TURNER, ARTHUR P., <i>Fayre Oakes, Hereford (Herefordshire).</i>
1889	WHEELER, Col. E. V. V., <i>Nevenham Court, Tenbury (Worcestershire).</i>
1915	WHITE, Capt. J. BELL, R.N.R., <i>Alderbourne Manor, Gerrards Cross (Buckinghamshire).</i>
1889	WILSON, Col. CHRISTOPHER W., <i>Rigmaden Park, Kirkby Lonsdale (Westmorland).</i>
1908	WRIGLEY, LOUIS C., 7 <i>Park Street, Cirencester (Monmouthshire).</i>

STANDING COMMITTEES.

* * Under By-law 39, the PRESIDENT is a Member *ex officio* of all Committees, and the TRUSTEES and VICE-PRESIDENTS are Members *ex officio* of all Standing Committees except the Committee of Selection.

The Honorary Director is a Member ex officio of all Committees.

Finance Committee.

ADEANE, C. R. W. (<i>Chairman</i>).	THOROLD, Sir J. H., Bart.	HARRISON, W.
DEVONSHIRE, Duke of.	AVELING, T. L.	MANSSELL, ALFRED.
NORTHBROOK, Earl of.	CARR, RICHARDSON.	MATHEWS, ERNEST.
FELLOWES, Rt. Hon. Sir A. E.	CORNWALLIS, Col.	MIDWOOD, G. NORRIS.
GREENALL, Sir G., Bart.	CRUTCHLEY, PERCY.	WHEELER, E. V. V.

Journal and Education Committee.

THOROLD, Sir J. H., Bart.	BROCKLEHURST, H. D.	MAY, W. A.
(<i>Chairman</i>).	CORNWALLIS, Col.	PLUMPTRE, H. F.
HASTINGS, Lord.	DUGDALE, J. MARSHALL.	WHEELER, E. V. V.
MORETON, Lord.	LUDDINGTON, J. L.	WHITE, Capt. J.
BOWEN-JONES, Sir J. B., Bart.	MANSSELL, ALFRED.	BELL.
ADEANE, C. R. W.	MATHEWS, ERNEST.	

Chemical and Woburn Committee.

LUDDINGTON, J. L.	BROCKLEHURST, H. D.	MIDWOOD, G. NORRIS.
(<i>Chairman</i>).	FALCONER, J.	PATTERSON, R. G.
HARLECH, Lord.	GREAVES, R. M.	PILKINGTON, C. M. S.
HASTINGS, Lord.	HOWARD, JOHN HOWARD.	REYNARD, F.
RANKSBOROUGH, Lord.	INGRAM, W. F.	TINDALL, C. W.
BOWEN-JONES, Sir J. B., Bart.	MAY, W. A.	TURNER, A. P.
KNIGHTLEY, Sir C. V., Bart.	MIDDLETON, C.	WHITE, Capt. J. BELL.

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ROGERS, C. C. (<i>Chairman</i>).	THOROLD, Sir J. H., Bart.	MIDDLETON, C.
MORETON, Lord.	BROWN, DAVIS.	PLUMPTRE, H. F.
BOWEN-JONES, Sir J. B., Bart.	CORNWALLIS, Col.	WHEELER, E. V. V.
HAZLERIGG, Sir A. G., Bart.	LUDDINGTON, J. L.	WHITE, Capt. J. BELL.

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(<i>Chairman</i>).	CRUTCHLEY, PERCY.	COLLEGE OF VET.
STRACHIE, Lord.	EADIE, J. T. C.	SURGEONS.
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THOROLD, Sir J. H., Bart.	MANSSELL, ALFRED.	SMITH, FRED.
*MCFADYEAN, Prof. Sir J.	*MASTER OF FARRIERS'	SEWARD, Capt.
ADEANE, C. R. W.	COMPANY.	STANYFORTH, Col.
BEHRENS, Capt. CLIVE.	MATHEWS, ERNEST.	SWITHINBANK, H.
BROWN, DAVIS.	MILLER, T. H.	WILSON, Col. C. W.
CARR, RICHARDSON.		

* *Professional Members of Veterinary Committee not Members of Council.*

Stock Prizes Committee.

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COVENTRY, Earl of.	CRUTCHLEY, PERCY.	OVERMAN, HENRY.
NORTHBROOK, Earl of.	EADIE, J. T. C.	REA, G. G.
HARLECH, Lord.	GARNE, W. T.	ROGERS, C. C.
MIDDLETON, Lord.	GREAVES, R. M.	ROWELL, JOHN.
BOWEN-JONES, Sir J. B., Bart.	HINE, J. H.	SMITH, FRED.
GREENALL, Sir G., Bart.	HOBBS, ROBERT W.	TINDALL, C. W.
BEHRENS, Capt. CLIVE.	MANSSELL, ALFRED.	TURNER, A. P.
BROWN, DAVIS.	MATHEWS, ERNEST.	WILSON, Col. C. W.
BUTTAR, T. A.	MIDWOOD, G. NORRIS.	The Stewards of
CARDEN, R. G.	MILLER, T. H.	Live Stock.
CARR, RICHARDSON.		

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CROSS, Hon. J. E.	HARRISON, W.	PILKINGTON, C. M. S.
BOWEN-JONES, Sir J. B., Bart.	HOWARD, JOHN HOWARD.	STANFORTH, Col.
ALEXANDER, D. T.	LUDDINGTON, J. L.	WHEELER, Col.
AVELING, T. L.	MIDDLETON, C.	The Stewards of
CRUTCHLEY, PERCY.	MYATT, JOHN.	Implements.

Showyard Works Committee.

GREENALL, Sir G., Bart.	CARR, RICHARDSON.	PILKINGTON, C. M. S.
(<i>Chairman</i>).	CRUTCHLEY, PERCY.	REA, G. G.
CROSS, Hon. J. E.	HARRISON, W.	REYNARD, F.
ALEXANDER, D. T.	HOWARD, J. HOWARD.	STANFORTH, Col.
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THE PRESIDENT.	MIDDLETON, Lord	HARRISON, W.

And the Chairman of each of the Standing Committees.

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MATHEWS, ERNEST	CARR, RICHARDSON.	HINE, J. H.
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HASTINGS, Lord.	DUGDALE, J. MARSHALL.	OVERMAN, HENRY.
STRACHIE, Lord.	EVENS, JOHN.	PLUMPTRE, H. F.
PARKER, Hon. C. T.	GREAVES, R. M.	SMITH, FRED.
THOROLD, Sir J. H., Bart.	HENDERSON, Lt.-Col. H. G.	WHEELER, Col.
BEHRENS, Capt. CLIVE.		

Special Committee.

DEVONSHIRE, Duke of	AVELING, T. L.	*NUTTALL, Prof.
(<i>Chairman</i>).	*BIFFEN, Prof. R. H.	REYNARD, F.
NORTHBROOK, Earl of.	CARR, RICHARDSON.	ROGERS, C. C.
FELLOWES, Hon. Sir A. E.	*COOPER, W. F.	TINDALL, C. W.
BOWEN-JONES, Sir J. B., Bart.	CORNWALLIS, Col.	*VOELCKER, Dr. J. A.
GREENALL, Sir G., Bart.	CRUTCHLEY, PERCY.	*WARBURTON, C.
THOROLD, Sir J. H., Bart.	GREAVES, R. M.	WHEELER, Col.
*McFADYEAN, Prof. Sir J.	HARRISON, W.	*WOOD, Prof. T. B.
ADEANE, C. H. W.	MATHEWS, ERNEST.	

* *Scientific Members of Special Committee not Members of Council.*

General Manchester Committee.

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McCABE, Sir DANIEL.	HOLT, Alderman E. HUDSON, THOMAS.
BULLOCK, W. D.	LAWSON, ALEX. SMITH, J. T. (<i>Town Clerk</i>).

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Secretary.—THOMAS McROW, 16 Bedford Square, W.C.

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Botanist.—Professor R. H. BIFFEN, F.R.S., *School of Agriculture, Cambridge.*

Zoologist.—CECIL WARBURTON, M.A., *School of Agriculture, Cambridge.*

Consulting Engineer.—F. S. COURTNEY, 25 Victoria Street, Westminster, S.W.

Surveyor.—J. R. NAYLOR, F.R.I.B.A., *Smith's Bank Chambers, Derby.*

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Publisher.—JOHN MURRAY, 50A Albemarle Street, W.

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Bankers.—THE LONDON COUNTY AND WESTMINSTER BANK, *St. James's Square.*

Distribution of Governors and Members of the Society. v

DISTRIBUTION OF GOVERNORS AND MEMBERS OF THE
SOCIETY, AND OF ORDINARY MEMBERS OF THE COUNCIL.

DISTRICT.	DIVISION	NUMBER OF GOVERNORS AND MEMBERS	NUMBER OF ORDINARY MEMBERS OF COUNCIL	ORDINARY MEMBERS OF COUNCIL
A.	BEDFORDSHIRE	80	1	J. H. Howard.
	CHESHIRE	356	2	Hon. J. E. Cross; G. Norris Mil- wood.
	CORNWALL	88	1	Brooking Trant.
	DERBYSHIRE	180	1	J. T. C. Eadie.
	DORSET	87	1	A. Hiscock.
	HAMPSHIRE AND CHANNEL ISLANDS	309	2	J. Falconer; Capt. Percy Seward.
	HERTFORDSHIRE	195	1	Richardson Carr.
	LANCASHIRE AND ISLE OF MAN	352	2	W. Harrison; T. H. Miller.
	MIDDLESEX	97	1	A. W. Perkin.
	MONMOUTHSHIRE	76	1	L. C. Wrigley.
	NORFOLK	479	3	{ Davis Brown; Lord Hastings; Henry Overman.
	NORTHAMPTONSHIRE	190	1	Sir C. V. Knightley.
	NORTHUMBRIAND	248	1	G. G. Rea.
	STAFFORDSHIRE	290	1	John Myatt; R. G. Patterson.
	WORCESTERSHIRE	101	1	Col. E. V. V. Wheeler.
	YORKSHIRE, N.R.	188	1	Capt. Clive Behrens.
	SCOTLAND	216	1	T. A. Buttar.
		—3,605	—23	
B.	HICKINGHAMSHIRE	141	1	Capt. J. Bell White, R.N.R.
	DEVON	166	1	J. H. Hine.
	DURHAM	122	1	C. Middleton.
	ESSEX	194	1	W. Neeton.
	HEREFORDSHIRE	147	1	A. P. Turner.
	LEICESTERSHIRE	170	1	Sir A. G. Huxterrig.
	LONDON	538	3	{ W. W. Chapman; Sir Howard Frank; W. A. May.
	NOTTINGHAMSHIRE	215	1	C. M. S. Pilkington.
	RUTLAND	24	1	Lord Bangsborough.
	SHROPSHIRE	443	2	Lord Harlech; Alfred Mansell.
	SUFFOLK	247	1	Fred Smith.
	SURREY	219	1	Capt. Dunbar Kelly.
	WILTSHIRE	180	1	James E. Rawlence.
	YORKSHIRE, W.R.	331	2	Major G. R. Lane-Fox, M.P.; Lt.-Col. E. W. Stanforth.
	SOUTH WALES	119	1	C. G. Rogers.
		—3,215	—19	
C.	BERKSHIRE	171	1	{ Lt.-Col. Hon. H. G. Henderson. M.P.
	CAMBRIDGESHIRE	164	1	J. L. Luddington.
	CUMBERLAND	102	1	Joseph Harris.
	GLAMORGAN	76	1	D. T. Alexander.
	GLOUCESTERSHIRE	263	2	H. D. Brocklehurst; W. T. Garne.
	HUNTINGDONSHIRE	46	1	John Rowell.
	KENT	342	2	T. L. Aveling; H. F. Plumtre.
	LINCOLNSHIRE	344	2	John Evans; C. W. Tindall.
	OXFORDSHIRE	152	1	B. W. Hobbs.
	SOMERSET	150	1	Lord Strachie.
	SUSSEX	265	1	W. F. Ingram.
	WARWICKSHIRE	223	1	Capt. R. Oliver-Bellasis.
	WESTMORLAND	51	1	Col. C. W. Wilson.
	YORKSHIRE, E.R.	151	1	F. Heynard.
	IRELAND	113	1	K. G. Carden.
	NORTH WALES	266	1	A. E. Evans.
		—2,975	—19	
IRISH COUNTRIES		314		
MEMBERS WITH NO ADDRESSES		21		
GRAND TOTALS		10,130	61	

TABLE SHOWING THE NUMBER OF GOVERNORS AND MEMBERS
IN EACH YEAR FROM THE ESTABLISHMENT OF THE SOCIETY.

Year ending with Show of	President of the Year	Governors		Members			Total
		Life	Annual	Life	Annual	Honorary	
1839	3rd Earl Spencer	—	—	—	—	—	146
1840	5th Duke of Richmond	88	189	146	2,484	5	2,699
1841	Mr. Philip Pusey	91	219	231	4,047	7	4,345
1842	Mr. Henry Hurdley	101	211	328	5,194	15	5,849
1843	4th Earl of Hardwicke	94	209	429	6,155	15	6,802
1844	3rd Earl Spencer	95	214	442	6,161	15	6,767
1845	5th Duke of Richmond	94	198	527	5,899	15	6,733
1846	1st Viscount Portman	92	201	554	6,105	19	6,871
1847	6th Earl of Egmont	91	195	607	5,478	20	6,391
1848	2nd Earl of Yarborough	93	186	648	5,387	21	6,353
1849	3rd Earl of Chester	89	178	552	4,645	20	5,541
1850	4th Marquis of Downshire	90	169	627	4,356	19	5,261
1851	5th Duke of Richmond	91	162	674	4,175	19	5,112
1852	2nd Earl of Dunc	93	156	711	4,002	19	4,981
1853	2nd Lord Ashburton	90	147	739	3,928	19	4,923
1854	Mr. Philip Pusey	88	146	771	4,152	19	5,177
1855	Mr. William Miles, M.P.	85	141	795	3,838	19	4,899
1856	1st Viscount Portman	83	139	839	3,896	20	4,773
1857	Viscount Oslington	83	137	896	3,953	19	5,068
1858	6th Lord Bernal	81	133	904	4,010	18	5,146
1859	7th Duke of Marlborough	78	130	927	4,008	18	5,161
1860	5th Lord Walsingham	72	119	937	4,047	18	5,183
1861	3rd Earl of Powis	84	90	1,113	3,328	18	4,533
1862	H.R.H. The Prince Consort	83	97	1,151	3,475	17	4,733
1863	Viscount Eversley	80	88	1,263	3,735	17	5,103
1864	2nd Lord Feversham	78	45	1,343	4,013	17	5,468
1865	Sir E. O. Kerrison, Bart., M.P.	79	81	1,386	4,190	16	5,752
1866	1st Lord Tredegar	79	84	1,395	4,049	15	5,622
1867	Mr. H. S. Thompson	77	82	1,388	3,903	15	5,445
1868	6th Duke of Richmond	75	74	1,409	3,888	15	5,449
1869	H.R.H. The Prince of Wales, K.G.	75	73	1,417	3,964	17	5,449
1870	7th Duke of Devonshire	74	74	1,511	3,764	15	5,436
1871	8th Lord Vernon	72	74	1,589	3,893	17	5,694
1872	Sir W. W. Wynn, Bart., M.P.	71	73	1,655	3,953	14	5,758
1873	Earl Cathcart	74	63	1,832	3,896	12	5,819
1874	Mr. Edward Holland	76	58	1,944	3,756	12	5,668
1875	Viscount Bridport	79	79	2,058	3,913	11	6,145
1876	2nd Lord Chesham	83	78	2,184	4,013	11	6,349
1877	Lord Skelmersdale	81	76	2,239	4,073	17	6,496
1878	Col. Knagscofe, C.B., M.P.	81	72	2,328	4,130	26	6,635
1879	H.R.H. The Prince of Wales, K.G.	81	72	2,453	4,700	26	7,333
1880	9th Duke of Bedford	83	70	2,673	5,083	20	7,929
1881	Mr. William Wells	85	68	2,765	5,041	19	8,069
1882	Mr. John Dent Dent	82	71	2,849	5,059	19	8,099
1883	6th Duke of Richmond and Gordon	78	71	2,970	4,952	19	8,129
1884	Sir Brandreth Gibbs	73	72	3,203	5,408	21	8,779
1885	Sir M. Lopes, Bart., M.P.	71	69	3,356	5,619	20	9,133
1886	H.R.H. The Prince of Wales, K.G.	70	61	3,414	5,569	20	9,134
1887	Lord Egerton of Tatton	71	64	3,440	5,397	20	8,897
1888	Sir M. W. Ridley, Bart., M.P.	66	56	3,521	5,225	16	8,844
1889	H.R. MAJESTY QUEEN VICTORIA	73	58	3,567	7,153	15	10,898
1890	Lord Moreton	122	58	3,846	6,941	17	10,894
1891	2nd Earl of Ravensworth	111	60	3,811	6,921	19	10,851
1892	1st Earl of Feversham	111	68	3,784	7,036	20	11,060
1893	1st Duke of Westminster, K.G.	107	74	3,788	7,138	21	11,127
1894	8th Duke of Devonshire, K.G.	113	73	3,798	7,212	22	11,248
1895	Sir J. H. Thorold, Bart.	120	80	3,747	7,119	23	11,149
1896	Sir Walter Gibbey, Bart.	126	83	3,665	7,263	23	11,159
1897	H.R.H. The Duke of York, K.G.	129	83	3,705	7,295	24	11,233
1898	5th Earl Spencer, K.G.	121	79	3,687	7,182	25	11,049
1899	Earl of Coventry	116	75	3,656	7,009	23	10,799
1900	H.R.H. The Prince of Wales, K.G.	111	71	3,628	6,832	24	10,669
1901	3rd Earl Crawford	102	70	3,564	6,538	27	10,033
1902	H.R.H. Prince Christian, K.G.	99	69	3,500	5,955	26	8,659
1903	H.R.H. The Prince of Wales, K.G.	96	62	3,439	5,771	27	8,347
1904	16th Earl of Derby, K.G.	89	68	3,375	5,066	32	8,473
1905	Lord Middleton	89	78	3,212	5,758	35	8,717
1906	Mr. F. S. W. Cornwallis	94	155	3,132	6,189	30	9,669
1907	Earl of Yarborough	91	174	3,076	6,250	29	9,629
1908	Duke of Devonshire	91	177	2,951	6,086	31	9,468
1909	7th Earl of Jersey, G.C.B.	86	168	2,878	6,894	31	9,669
1910	Sir Gilbert Greenall, Bart.	85	168	2,805	7,191	31	10,039
1911	HIS MAJESTY KING GEORGE V.	86	169	2,741	7,283	30	10,239
1912	Lord Middleton	85	170	2,741	7,283	26	10,444
1913	Earl of Northbrook	89	173	2,826	7,629	28	10,544
1914	Earl of Powis	88	184	2,517	7,313	28	10,369
1915	Duke of Portland, K.G.	88	184	2,517	7,313	28	10,369

**STATEMENT made to the Council by the Chairman
of the Finance Committee, on presenting the
Accounts for the year 1915.**

Mr. ADEANE, in presenting, on behalf of the Finance Committee, the accounts of the Society for the year 1915, said that for the purpose of conversion of the amount of Consols held by the Society, Hills' Bequest, and the Insurance Fund, 96,500*l.* War Loan Stock had been purchased at par with money borrowed from the bank. The sale of that stock realised 93,795*l.*, leaving a balance against the Society of 2,705*l.* In addition, the Society had to pay bank interest amounting to 1,261*l.*, together with commission of 14*l.* on conversion, showing a total indebtedness of 3,980*l.* To meet this deficiency the Society received six months' interest on 70,900*l.* (the amount required to convert the Society's holding in Consols)=1,356*l.* The interest on the balance between that amount and the 96,500*l.* was apportioned between the other two funds—the Hills' Bequest and the Insurance Fund—which the Society receives back, in addition to their share of the capital expenditure—namely, from Hills' Bequest 422*l.* and from the Insurance Fund 625*l.* There was also 189*l.* recoverable in respect of income-tax, and 468*l.* which he had mentioned to the Council was in the nature of a windfall, giving a total set-off of 3,060*l.*, against 3,980*l.* gross deficiency, showing a net loss of 920*l.* as the cost of the conversion to the Society, which amount they hoped to liquidate out of current receipts.

The total receipts were 432*l.* less than in the preceding year, mainly owing to the small election of new members. The expenditure showed an increase of 1,927*l.* as compared with the year 1914. This was explained by the fact that the Society had made two large subscriptions during last year—namely, 1,000*l.* to the National Relief Fund and 1,000*l.* to the Agricultural Relief of Allies Fund. The total expenditure was 11,698*l.*; the total receipts were 9,937*l.*, showing a debit balance of 1,761*l.*

The large decrease in the Society's capital of 10,823*l.* should really be spread over several years. It was mainly due to the depreciation of Consols since the Society began to invest in the stock ten years ago. The figure of 10,823*l.* was accounted for in the following manner:—

Depreciation of Consols	£
Debit Balance on Ordinary Account	8,620
Loss on Nottingham Show	1,761
Depreciations	445
	239
	11,125
Less: Life Contributions, &c., added to Capital	302
	10,823

The position would have been very much worse if they had held on to Consols, as their value on December 31, 1915, at 584, had been only 30,938*l.* against the War Loan stock at par 35,408*l.*, a difference of 4,470*l.*

He thought they were to be congratulated on the fact that the Society's finances were now on a firm basis, because all their money was invested in terminable stocks. To prevent their being too much depressed by their losses they should look back a moment on their gains during the last ten years. Going back to the balance-sheet of the year 1905, he found that the Society's capital then stood at 2,628*l.* To-day, allowing for it having been written down by 10,823*l.*, the Society's capital stood at 47,031*l.*, and in addition they had for the purposes of insurances of the staff a sum of 7,333*l.* invested in War Loan stock, making a total of 54,364*l.*

He then presented the following estimates for 1916:—

FORECAST OF ORDINARY RECEIPTS AND EXPENDITURE FOR 1916.
(Other than in respect of the Show.)

Prepared by direction of the Finance Committee on the basis of the Recommendations of September 24, 1915, made by the Special Committee.

Actual Figures for 1915.		Receipts.	
£			£
8,021	From Subscriptions for 1916 of Governors and Members		8,000
75	From Interest on Daily Balances		100
1,690	From Interest on Investments		1,500
151	From Sales of Text Books, Pamphlets, &c.		150
	(This does not include the sales of Journals which are deducted from the cost of production.)		
9,937			9,750
		Expenditure.	
£			£
1,500	Salary of Secretary and Official Staff		1,500
140	Pensions to Officials		140
781	Rent, Lighting, Cleaning, Wages, &c. (say)		750
306	Printing and Stationery		300
157	Postage and Telegrams		150
300	Miscellaneous		300
890	Journal		850
710	Chemical Department		710
150	Contribution to Woburn Farm		150
71	Contribution to Hills' Bequest		75
250	Botanical Department		250
200	Zoological Department		200
402	Veterinary Department		400
143	Examinations for National Diploma (R.A.S.F. Share)		200
2,500	Contribution from Subscriptions to Show Fund		2,500
8,671			8,671
		Exceptional Expenditure.	
£			£
106	Printing Index to Journal		100
921	Cost of Conversion of Society's Consols		900
1,000	Contribution to National Relief Fund		1,000
1,000	Contribution to Agricultural Relief of Allies' Fund		1,000
11,698			11,000
		Estimated Receipts	£ 9,750
		Estimated Expenditure	8,671
-1,761	Estimated Receipts over Expenditure		1,179

Sir HOWARD FRANK said that he did not think the Council would wish to pass the accounts without congratulating Mr. Adeane on the favourable position of the Society in all the circumstances. They all realised that they were passing through trying times, and the Society were fortunate in having as Chairman of the Finance Committee a man who guided them through their affairs in such a satisfactory manner and whose experience had been of so much assistance. He felt that they should not pass the motion without congratulating Mr. Adeane and thanking him.

Mr. ADEANE thanked Sir Howard Frank for his kind reference. It was an encouragement to him after being for ten years, more or less, responsible for the finances of the Society. He owed a great deal to the co-operation of his colleagues on the Finance Committee. He was very glad that they had been able to report so satisfactorily on the finances of the Society at the present time.

STATEMENT OF FUNDS HELD BY THE SOCIETY IN TRUST OR WHICH ARE NOT CONSIDERED AVAILABLE FOR GENERAL PURPOSES, DECEMBER 31, 1915.

To Hills' Request for Pot-culture Experiments.	£	s.	d.
<i>Less:</i> Declaration of Consols at time of conversion	9,000	0	0
	3,582	7	11
	5,417	12	1

By 5,417l. 12s. 1d. War Loan Stock at cost
(*Value on December 31, 1915, at 97½ = 5,298l. 12s. 5d.*)

To Fund provided by Sir Walter Gilbey for Endowment of Lectureship at Cambridge until July 31, 1917, when any balance on this account will become the property of the Society	£	s.	d.
	1,088	13	5
	5,417	12	1

By 1,140l. Metropolitan Water A Stock at cost
(*Value on December 31, 1915, at 7½ = 849l. 6s. 0d.*)
By amount included in the Society's Sundry Creditors' Account :-
 Metropolitan Water A Stock £ s. d.
 Accumulated income " " " 88 13 5

To Superannuation and Insurance Fund :- Amount set aside in accordance with Declaration of Trust of July 26, 1911	£	s.	d.
<i>Less:</i> Depreciation of Consols at time of conversion	9,471	5	0
	1,827	18	1
Accumulations to December 31, 1915	7,333	6	8
	846	14	1
	£8,180	0	9

By Investments in names of Trustees of Superannuation and Insurance Funds, viz. :-
 11,000l. Consols, now converted into 7,333l. 6s. 8d.
 War Loan Stock 7,333 6 8
 (*Value on December 31, 1915, at 97½ = 7,131l. 13s. 4d.*)
 201l. 8s. 11d. Australian Govt. at cost 201 0 2
 108l. 8s. 11d. Queensland Govt. at cost 108 14 0
 Cash at Bank 516 19 11
 £8,180 0 9

Examined, audited, and found correct, this 17th day of February, 1916.

THOMAS McRROW, *Secretary.*
WELTON, JONES & CO., *Accountants.*

JONAS M. WEBB,
HUBERT J. GREENWOOD, } *Trustees on behalf of the Society.*

x

Dr.

ROYAL AGRICULTURE

BALANCE-SHEET

Corresponding figures for 1914.		£ s. d.	£ s. d.
3,451	To SUNDRY CREDITORS—		
88	Sundry Creditors	2,085	17 9
233	Subscriptions received in 1915 in advance	42	8 0
3,782	Show Receipts received in 1915 and belonging to 1916	1,927	11 9
	To LOAN		40 2
	To CAPITAL—		
58,956	As at December 31, 1914	57,854	7 1
	SHOW FUND—		
	Loss on Nottingham Show	2,945	0 3
1,116	Less Contribution from Ordinary Account	2,500	0 0
			445 0 3
56,940			57,409 6 10
586	Life Compositions received in 1915	232	0 0
51	Donations towards the Society's Funds	50	0 0
598			302 0 0
58,475			57,711 6 10
	LESS:—Difference between cost of the Society's Consols (44,028l. 15s. 0d.) and 35,498l. 13s. 4d. War Loan Stock under the conversion scheme	8,620	1 8
	Debit Balance on Ordinary Income and Expenditure account	1,760	15 7
			10,380 17 3
			47,330 9 7
	DEPRECIATIONS written off, viz.:—		
26	Fixtures	24	9 2
104	Furniture	93	16 0
6	Machinery	5	6 2
134	Show Plant	126	2 3
50	Buildings at Woburn	50	0 0
320			299 13 7
57,854			4
£61,636			83

THOMAS MCROW, *Secretary.*
WELTON, JONES & CO., *Accountants.*

SOCIETY OF ENGLAND.
DECEMBER 31, 1915.

xi
Cr.

	£ s. d.	£ s. d.
By RESERVE FUND—		
35,408l. 13s. 4d. War Loan Stock received, under the conversion rights, for 53,113l. Consols (Value on December 31, 1915 @ 97½=21,434l. 18s. 7d.)		35,408 13 4
2840l. 13s. 6d. Metropolitan 3 per cent. Consolidated Stock at 87½		2,500 0 0
(Value on December 31, 1915, M.P. 82½=2,356l. 9s. 1d.)		
6,528l. 1s. 6d. Canadian 4 per cent. Stock at 96½ (Value on December 31, 1915, @ 92=6,005l. 16s. 7d.)		6,300 0 0
By LEASE OF 16 BEDFORD SQUARE	2,200 0 0	
Less Amount written off	100 0 0	
		2,100 0 0
By FIXTURES—		
Value at December 31, 1914	326 2 5	
Less Depreciation at 7½ per cent.	24 9 2	
		301 13 3
By FURNITURE—		
Value at December 31, 1914	938 0 3	
Less Depreciation at 10 per cent.	93 16 0	
		844 4 3
By PICTURES (500l.) and BOOKS (1,000l.)		1,500 0 0
By MACHINERY—		
Value at December 31, 1914	53 1 7	
Less Depreciation at 10 per cent.	5 6 2	
		47 15 5
By SHOW PLANT—		
Value at December 31, 1914	1,261 2 10	
Less Depreciation at 10 per cent.	126 2 3	
		1,135 0 7
Added during 1915	145 10 2	
		1,280 10 9
By BUILDINGS FOR POT EXPERIMENTS AT WOBURN—		
As per Account at December 31, 1914	250 0 0	
Less Depreciation	50 0 0	
		200 0 0
By SUNDRY DEBTORS		1,887 10 6
By CASH AT BANKERS AND IN HAND—		
Ordinary Account	1,386 8 6	
In Hand	34 1 6	
		1,420 10 0
		<u>£53,790 17 6</u>

Examined, audited, and found correct, this 17th day of February, 1916.

JONAS M. WERR, }
HUBERT J. GREENWOOD, } Auditors on behalf of the Society.

STATEMENT OF ORDINARY INCOME

The Expenditure in this account includes not only cash

Corresponding figures for 1914.

Income.

		£	s.	d.
934	ANNUAL SUBSCRIPTIONS:—			
	<i>Governors:</i> Subscriptions for 1915	943	0	0
90	<i>Members:</i> Received in 1914, but belonging to 1915	8	2	0
7,997	Subscriptions for 1915	6,731	5	0
118	Subscriptions for 1915 (Additional)	191	5	0
64	Subscriptions for previous years	64	2	0
	LIFE GOVERNORS AND MEMBERS:—			
92	Annual Contributions	80	10	0
8,395	MISCELLANEOUS:—			
111	Interest on Daily Balances	71	10	0
1,567	Income from Investments	1,689	12	1
63	Sales of Pamphlets, Diagrams, &c.	25	10	4
214	Sales of Text Book	112	15	1
19	Miscellaneous	13	15	0
1,074	Rent of 12 Hanover Square	302	10	6
	Less Rent paid	302	10	0
				9.

Debit balance carried to Balance Sheet £15

£10,360£10,360THOMAS MCROW, Secretary.
WELTON, JONES & CO., Accountants.

EXPENDITURE FOR THE YEAR 1915.

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Expenditures in connection with the year's transactions.

Expenditure.

GENERAL ADMINISTRATION:—		£ s. d.	£ s. d.
Salaries of Official Staff		1,568 17 4	
Pensions to Officials		149 0 0	
Legal Charges and Auditors' Fees		88 17 5	
Rent, Rates, Taxes, Insurance, and House Expenses		791 4 7	
Purchase of Books		6 17 0	
Printing and Stationery		325 11 5	
Postage and Telegrams		157 4 2	
Carriage of Parcels and Travelling Expenses (including annual visit to Woburn)		89 16 8	
Advertising and Miscellaneous Office Expenses		78 7 0	
			3,326 15 7
JOURNAL OF THE SOCIETY, VOL. 76:—			
Printing and Binding		134 18 1	
Postage, Packing, and Delivery		215 0 0	
Editing and Literary Contributions		255 0 0	
Illustrations		80 0 0	
			1,114 18 1
	£ s. d.		
Less Sales (Vol. 75 and earlier)	56 4 10		
Advertisements (Vol. 76)	185 0 0		
		241 4 10	
		873 13 3	
Add Debit Balance from Vol. 75		6 6 9	
			880 0 0
PAMPHLETS:—			
Printing, &c.			35 5 0
LABORATORY:—			
Salary and Petty Cash			710 7 7
OTHER SCIENTIFIC DEPARTMENTS:—			
Botanist's Salary		250 0 0	
Zoologist's Salary		200 0 0	
Grant to Royal Veterinary College		400 0 0	
Medals for Proficiency in Cattle Pathology		2 6 6	
			852 6 6
NATIONAL DIPLOMA IN AGRICULTURE:—			
Honoraria and Expenses of Examiners		151 14 7	
Travelling Expenses of Officials		46 0 5	
Hotel Expenses of Examiners and Officials		36 15 7	
Printing, Stationery, and Postage		35 1 0	
Writing Diplomas		12 18 2	
Salaries for Assistants		74 10 0	
		356 19 9	
Less Entry Fees and Sales of Examination Papers		223 5 4	
		133 14 5	
Less Highland and Agricultural Society's Moiety		66 17 2	
			66 17 3
NATIONAL DIPLOMA IN DAIRYING:—			
Hire of Premises, &c.		23 2 7	
Fees to Examiners		58 3 3	
Hotel and Travelling Expenses		35 19 3	
Printing and Postage		2 17 9	
		120 3 4	
Less Entry Fees and Sales of Examination Papers		44 9 6	
			75 13 10
EXTRA EXPENDITURE:—			
Printing Index to Journal		176 8 9	
Cost of conversion of Society's Census		920 8 11	
Contribution towards Woburn Farm		150 0 0	
Hills Bequest.—Contribution for current year		73 16 10	
Contribution to National Relief Fund		1,000 0 0	
Contribution to Agricultural Relief of Allies Fund		1,000 0 0	
			3,250 14 9
CONTRIBUTION TO SHOW FUND			2,500 0 0
			£11,688 0 6

Examined, audited, and found correct, this 17th day of February, 1916.

JONAS M. WEBB.
HUBERT J. GREENWOOD. } Auditors on behalf of the Society.

xiv STATEMENT OF RECEIPTS AND EXPENSE
JUNE 2

Corresponding figures for 1914.

£
2,000
2,456
2,183

Receipts.

	£	s.	d.	1
Subscription from Corporation of Nottingham				2
Prizes given by Agricultural and Breed Societies				2.00
Contributions to Show Fund				2.18

FEES FOR ENTRY OF IMPLEMENTS:—

6,582	Implement Exhibitors' Payments for Shedding	5,076	s.	2
134	Non-Members' Fees for Entry of Implements	35	0	0
53	Fees for Entry of "New Implements"	46	0	0
6,769				5.11

FEES FOR ENTRY OF LIVE STOCK:—

3,192	By 2,116 Members' Entries @ 11s.	2,116	0	0
8	29 Substituted Entries @ 5s.	7	5	0
396	By 138 Non-Members' Entries @ 21s.	276	0	0
813	Horse Boxes (383 @ 11s.; 60 @ 21s.).	503	0	0
32	52 Entries @ 10s.	26	0	0
75	226 Entries @ 5s.	56	10	0
4,486				2.38

FEES FOR ENTRY OF POULTRY:—

47	By Members:—207 Entries @ 2s. 6d.	25	17	6
175	By Non-Members:—1,077 Entries @ 3s. 6d.	188	9	6
222				11

OTHER ENTRY FEES:—

	Produce	55	2	6
	Horse-jumping Competitions	73	0	0
	Farm Prize Competitions	45	10	0
398				17

CATALOGUE:—

15	Extra Lines for Particulars of Implement	£	s.	d.
	Exhibits	22	3	0
5	Woodcuts of "New Implements"	1	12	0
497	Advertising in Catalogue	269	18	0
10	Sales of Implement Section of Catalogue	16	2	11
551	Sales of Combined Catalogue	533	4	1
15	Sales of Jumping Programme	13	0	0
1,102				856
29	Less Commission on Sales	39	9	1
1,073				11

MISCELLANEOUS RECEIPTS:—

18	Admission to Horticultural Exhibition	356	18	11
77	Garage	138	2	1
13	Admission to Dog Show (25 % of net takings).	11	4	1
75	Premium for Supply of Refreshments	75	0	0
101	Rent for Railway Offices	98	2	0
60	Premium for Cloak Rooms	60	0	0
30	Rent for Board of Agriculture Pavilion	30	0	0
114	Advertisements in Stock Schedule	110	17	4
10	Advertisements in Showyard	6	0	0
3	Miscellaneous	25	1	0
501				11

£80,127

Carried forward

£14,380

URE OF THE SHOW AT NOTTINGHAM, JULY 3, 1915.

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Expenditure.

COST OF ERECTION OF SHOWYARD:—		£ s. d.	£ s. d.
Transferring Society's Permanent Buildings from Shrewsbury to Nottingham (including taking down and re-erecting).		1,429 18 7	
Fencing round Showyard		507 18 9	
Implement Shedding		1,122 15 10	
Stock Shedding		2,596 10 9	
Poultry and Produce Sheds		301 19 2	
Dairy		278 15 6	
Fodder Shed and Office		50 19 2	
Grand Stand and Large Ring		373 17 3	
Horse-shoeing Shed and Stabling		—	
Various Offices and Stands		543 12 10	
Painting Signs and fixing do, Fencing and Judging Rings		400 8 5	
Elucation and Forestry Exhibition		—	
Insurance		35 6 8	
Ironmongery		18 14 0	
Hire of Canvas		902 3 4	
General Labour and Horse Hire (including Society's Clerk of Works)		748 14 3	
		9,309 14 6	
Less 80 Flag Poles at 10s.		40 0 0	
		9,269 14 6	
SURVEYOR:—			
Salary, 300l.; Assistant Surveyor's Salary, 100l.; Travelling Expenses to London, 28l. 7s.; Petty Cash, 2l. 3s. 1d.		430 10 1	
PRINTING:—			
Printing of Prize Sheets, Entry Forms, Admission Orders, Circulars to Exhibitors, Prize Cards, Tickets, and Miscellaneous		602 15 11	
Programmes for Members		57 10 6	
Plans of Showyard		13 14 0	
Printing of Catalogues		596 11 5	
Binding of Catalogues		71 3 0	
Carriage of Catalogues		34 14 4	
Printing Awards		75 11 0	
Programmes of Jumping Competitions		22 12 11	
		1,474 13 1	
ADVERTISING:—			
Advertising Closing of Entries in Newspapers		94 4 7	
Advertising Show in Newspapers		181 13 0	
Bill Posting		562 19 0	
Printing of Posters, &c.		234 16 3	
Press Agent		35 8 2	
Press Visit		50 1 0	
		1,159 2 0	
POSTAGE, CARRIAGE, &c.:—			
General Postage		88 3 2	
Postage of Badges to Members		39 10 7	
Carriage of Luggage		10 13 3	
		138 12 0	
AMOUNT OF MONEY PRIZES AWARDED, including 2,181l. 12s. 6d. given by various Societies (see receipt per contra). Gold Cup		8,409 5 0	
COST OF FORAGE FOR LIVE STOCK:—			
Hay, 238l. 1s. 3d.; Straw, 397l. 17s.; Green Food, 158l. 0s. 9d.; Labour, 49l. 8s. 6d.; Insurance, 2l. 1s. 3d.; Miscellaneous, 8l. 9s. 6d.		853 17 9	
Less Sales		79 17 6	
		774 0 3	
JUDGES' FEES AND EXPENSES:—			
Judges of Miscellaneous Implements, 10l. 10s. 10d.; Horses, 62l. 11s. 1d.; Cattle, 130l. 4s. 5d.; Sheep, 139l. 8s.; Pigs, 31l. 5s. 7d.; Poultry, 20l. 14s. 10d.; Produce, 39l. 10s. 8d.; Gates and Fencing, 3l. 11s. 8d.; Luncheons, 33l. 5s.		480 1 11	
Badges for Judges and other Officials		34 15 7	
Rosettes		35 5 3	
		549 7 1	
Carried forward		222,222 19 8	

STATEMENT OF RECEIPTS AND EXPENDITURE

Corresponding figures for 1914

£
80,127

Receipts (contd.).

Brought forward £ 4 12

ADMISSIONS TO SHOWYARD:—

540	Tue-day, June 29, @ 5s.	408 10 0
1,535	Wednesday, June 30, @ 2s. 6d.	1,507 10 0
2,470	Thursday, July 1, @ 2s. 6d. (after 3 p.m. 1s.)	2,582 10 0
1,817	Friday, July 2, @ 1s.	1,800 0 0
699	Saturday, July 3, @ 1s.	1,630 15 0
388	Season Tickets	141 0 0
155	Day Tickets	20 10 0
7,474		7,474 10 0

ENTRANCES TO HORSE RING:—

170	Wednesday, June 30	125 0 0
149	Thursday, July 1	130 18 0
145	Friday, July 2	99 18 0
47	Saturday, July 3	73 16 0
162	Tickets sold for Reserved Enclosure	112 16 0
973		539 18 0

SALES:—

147	Sales of Produce at Dairy	
201	Auction Sales in Showyard (Share of Commission)	
38,982		38,982 0 0

3616 Debit Balance

£38,998

Examined, audited, and found correct, this 25th day of November 1915

THOMAS MCROW, Secretary.
WELTON, JONES & CO., Accountants.JONAS M. WEBB,
H. J. GREENWOOD,
NEWELL P. SQUAREY.

Expenditure (contd.).

Brought forward	£ s. d.	£ s. d.
		22,225 10 8
GENERAL ADMINISTRATION :—		
Stewards :—Personal and Railway Expenses	94 13 3	
Assistant Stewards :—Personal and Railway Expenses	160 1 7	
Official Staff :—Extra Clerks, 68l. 8s. 8d.; Lodgings, 29l. 18s. 6d.; Maintenance of Clerks, 38l. 8s. 3d.; Travelling Expenses, 37l. 14s. 1d.; Secretary's Hotel and Travelling Expenses, 69l. 12s. 9d.	215 1 9	
Finance Office :—Superintendent of Turnstiles, 9l. 6s. 7d.; Grand Stand Men, 30l. 19s. 6d.; Turnstile Men, 28l. 0s.	86 13 1	
Bank Clerks, 18l. 7s. 3d.		
Awards Office : Clerks, 32l. 11s. 6d.; Awards Boys, 10l. 3s.	42 14 6	
		539 4 6
General Management :—		
Foreman and Assistant Foremen	110 2 8	
Yardmen and Foddermen	45 3 6	
Door and Gate Keepers	59 9 10	
Veterinary Department :—Veterinary Inspectors	85 17 2	
Engineering Department :—Consulting Engineer and Assistants, 94l. 17s. 6d.; House and Maintenance, 14l. 10s. 6d.	109 7 6	
Police, &c. :—Metropolitan Police, 538l. 1s. 1d.; Commissionersaires, 16l. 10s.	554 11 1	
		964 11 9
Dairy :—Staff, 139l. 6s.; Milk, 88l. 9s. 9d.; Ice, 15l. 15s.; Utensils, 53l. 18s. 6d.; Salt, 3l. 12s.; Fuel, 6l. 12s.; Butter Tests, 25l. 1s. 6d.; Purchase of Cheese, 27s. 5d.; Lodgings, 6l. 16s. 8d.; Carriage, 2l. 12s.; Butter and Cheese Boxes, 3l. 14s. 5d.; Milk Analysis, 13l. 10s. 1d.; Refreshments, 10l. 8s. 3d.; Labour, 12l. 12s. 8d.; Fuel, 2l. 18s. 11d.; Miscellaneous, 10l. 8s. 2d.		
Analysis of Cider	7 19 4	
Poultry :—Superintendent and Assistant, 17l. 6s. 7d.; Penning and Feeding, 18l. 18s. 11d.; Labour, 14l. 8s. 8d.; Carriage, 12l. 18s.; Baskets, 4l. 10s.	68 2 2	
Horse-shoeing		
		476 2 9
Farin Prize Competition : Expenses of Judging Farms	294 19 0	
Horticulture : Hire of Tent, 197l. 4s. 8d.; Judges, 18l. 10s. 6d.; Stewards, 23l.; Wages, 67l. 4s. 4d.; Sand, 13l. 11s. 6d.; Medals, 21l. 19s.; Printing, 20l.; Advertising, 14s.; Carriage, 19l. 18s. 4d.	382 2 4	
(For Admissions see Miscellaneous Receipts.)		
Plantations Competition		
GENERAL SHOWYARD EXPENSES :—		
Band	165 0 0	
Ambulance	50 0 0	
Telephone Extension	122 10 6	
Telegraph Extension	43 5 0	
Hire of Chairs	48 0 8	
Plans of Showyard	19 6 0	
Hire of Furniture	90 15 2	
Education and Parsimony		
Billposting in Showyard	14 12 3	
Medals	22 8 1	
Hire of Scales	—	
Foldier	5 8 8	
Offend Luncheons	2 0 6	
Ton	2 10 0	
Fuel	0 9 0	
Sleepers	5 18 0	
Boilchairmen	—	
Carriage	6 5 6	
Wood Demonstration	—	
Gas	9 0 2	
Hire of Weighbridge	—	
Miscellaneous	17 13 2	
		665 2 8
EXTRA EXPENDITURE :—		
Compensation for use of Ground	655 0 0	
Gas and Water Mains and Meters	514 17 2	
Water Rate	21 10 8	
		1,191 7 10
Outstanding Account from Shrewsbury Show	16 6 1	
		£26,755 16 6
Actual loss on the Nottingham Show		
Less :—Contribution from the Ordinary Funds of the Society to the Show Fund	£2,945 0 3	
	2,500 0 0	
		<u>£445 0 3</u>

NOTTINGHAM SHOW, 1915.

Statement showing the distribution of the
Prizes awarded in the several sections of
the Nottingham Show, with comparative figures of
the Shrewsbury Show, 1914.

Corresponding figures for 1914.	STATEMENT OF PRIZES AWARDED:—		
	£	£	s. d.
3,233	Horses	2,020	0 0
3,021	Cattle	2,335	10 0
2,128	Sheep	1,723	10 0
726	Pigs	720	15 0
468	Poultry	449	0 0
116	Cheese and Butter	113	0 0
47	Bacon and Hams	36	0 0
43	Cider and Perry	47	0 0
88	Wool	108	0 0
21	Bottled Fruit	17	0 0
46	Horse-shoeing	—	—
56	Butter-making	—	—
470	Farms	625	0 0
51	Horticulture	199	6 0
40	Contribution to Bee Department	—	—
—	Farmers' Milk Competition	15	10 0
10,554		8,409	5 0
2,495	Less : —Prizes given by various Societies, &c.	2,181	12 6
2,183			
4,678			
5,876			
		<u>£6,227</u>	<u>12 6</u>

[Copies of the full Report of any of the Council Meetings held during the year 1915 may be obtained on application to the Secretary, at 16 Bedford Square, London, W.C.]

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

Minutes of the Council.

WEDNESDAY, JANUARY 27, 1915.

At a Monthly Council, held at 16 Bedford Square, London, W.C., the Duke of PORTLAND, K.G. (President), in the Chair:—

Present:—Trustees.—Sir J. B. Bowen-Jones, Bart., the Duke of Devonshire, G.C.V.O., Sir Gilbert Greenall, Bart., C.V.O., Lord Middleton, Lord Moreton, the Earl of Northbrook, Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. C. Adeane, Mr. Percy Crutchley, the Right Hon. Sir A. E. Fellowes, K.C.V.O., Mr. R. M. Greaves, the Hon. Cecil T. Parker.

Other Members of the Council.—Mr. T. L. Aveling, Mr. H. Dent Brocklehurst, Mr. Davis Brown, Mr. W. W. Chapman, Mr. John Evens, Mr. J. Falconer, Sir Howard Frank, Lord Harlech, Mr. Joseph Harris, Mr. W. Harrison, Sir Arthur G. Hazlerigg, Bart., Mr. A. Hiscock, Mr. W. F. Ingram, Sir Charles V. Knightley, Bart., Mr. J. L. Luddington, Mr. Ernest Mathews, Mr. W. A. May, Mr. C. Middleton, Mr. G. Norris Midwood, Mr. W. Nocton, Mr. A. W. Perkin, Mr. C. M. S. Pilkington, Mr. H. F. Plumptre, Lord Ranksborough, C.V.O., C.B., Mr. G. G. Rea, Mr. F. Reynard, Mr. C. C. Rogers, Capt. Percy W. Seward, Mr. Fred Smith, Mr. C. W. Tindall, Mr. A. P. Turner, Col. C. W. Wilson, and Mr. L. C. Wrigley.

The following Members of the Nottingham Local Committee were also present:—Mr. A. W. Hickling and Councillor J. G. Small.

The PRESIDENT, on taking the chair for the first time, thanked the meeting most sincerely for the great honour they had done him. He assured them that during his year of office he would do all he could to carry out his duties, and he trusted that in doing so he would meet with their satisfaction. Notwithstanding the present unfavourable time, he trusted that the Show at Nottingham would be, at all events, somewhat of a success. For his part, he would leave no stone unturned to make it so, and that was also the intention of the Local Committee. He was sure that he could rely on their cordial co-operation, and for that reason he looked forward with confidence and pleasure to the work during the year that was before them.

Before proceeding with the ordinary business of the meeting, it was his melancholy duty to report formally the death of the Earl of Feversham, who was, with one exception—he referred to Sir Bowen Bowen-Jones—the oldest member of Council, having been elected in the year 1876. Lord Feversham had been appointed a Vice-President in 1888, and had been President of the Society in 1892, when the Show had been held at Warwick. During his long life, Lord Feversham had done a great deal of useful work for agriculture, but his sphere of activity did not only embrace his own county, but covered a very much larger area, and the members of Council would greatly regret the loss the Society had sustained by the death of Lord Feversham.

He regretted, too, to have to allude to the grievous loss that had occurred to, and the great sorrow that had come to, one whom many of them could claim as a warm personal friend. He referred to the death in action of Lord Worsley, the gallant son of the Earl of Yarborough. He was perfectly certain that both Lord and Lady Yarborough had the warm and sincere sympathy of the Council, and he begged their permission to send a letter of condolence to them in their great sorrow.

The minutes of the last meeting of the Council, held on Wednesday, December 9, 1914, were taken as read and approved.

Twenty-four duly nominated candidates were admitted into the Society under By-Law 2, and two Members were re-elected under By-Law 14.

The Report of the Finance Committee was received and adopted, together with the Accounts and Balance Sheet for 1914 and the Estimates for 1915. An explanatory statement regarding these documents was made to the Council by the Chairman of the Committee, Mr. ADEANE.

In presenting the Report of the Chemical and Woburn Committee which was received and adopted--Sir BOWEN BOWEN-JONES briefly recalled a few of the salient points in the history of the Woburn Experimental Station and made reference to the repeated applications that had been made to the Board of Agriculture and the Development Commissioners for further assistance in order to extend the scope and character of the research work at the Station.

While the Chemical Committee believed thoroughly in the new Plant Physiologist Scheme, as set out in their earlier report, they, Sir BOWEN said, contented themselves this year, on account of the Society's losses at Shrewsbury, and probable deficiency at Nottingham, with going on practically as at present.

The Committee asked, accordingly, for a grant of 1,036*l.*, the same as given in 1914, for the work of the Chemical and Woburn Departments. They asked, further, the sanction of the Council to the separation financially of these two departments in the future, allotting 715*l.* of the total grant of 1,036*l.* to the Chemical Department, and the balance (321*l.*) to the Woburn Station, the assistants at the Pot-culture Station to be in future, as the farm manager was now, the direct servants of the Society, appointed and paid by the Society.

Lastly, they asked that the new scheme, embracing the establishment of a fresh department--that of plant physiology--be referred to the Special Committee for consideration and report to the Council. Perhaps he might be allowed to move the resolutions as read by the Secretary, and to put them separately, which would enable the Council to discuss them better than if they were submitted *en bloc*.

Sir BOWEN BOWEN-JONES accordingly moved :

"(1) That the Council be asked for a continuation of the grant of 1914, in order to carry on the work on the same lines as of late years."

Mr. ADEANE seconded this, as, he said, the sum had already been voted by the Finance Committee. It was accordingly carried.

Sir BOWEN BOWEN-JONES then moved :

"(2) That the Council be asked to sanction the separation, financially, of the Chemical and Woburn Departments, a grant of 715*l.* being given for the Chemical Department, and one of 321*l.* for Woburn, in all 1,036*l.* (being the same as in 1914) and that the officials at Woburn be in future the direct servants of the Society."

This was seconded by Mr. FALCONER, and adopted.

Sir BOWEN BOWEN-JONES further moved :

"(3) That the Council be asked to refer to the Special Committee, for their consideration and report to the Council, the new scheme (involving the appointment of a new officer, a Plant Physiologist) at an estimated increased cost to the Society of 325*l.* per annum, and with a view to its possible adoption when the financial situation admits."

Mr. MAY seconded.

Sir JOHN THOROLD moved as an amendment :

"That the whole question of the future of the Woburn Experimental Station be referred to the Special Committee."

A discussion ensued in which Sir BOWEN BOWEN-JONES, Mr. HARRISON, Mr. FALCONER, Mr. MIDDLETON, Sir JOHN THOROLD, Mr. BROCKLEHURST, Mr. MAY, and Mr. ADEANE took part. The Duke of DEVONSHIRE suggested that Sir Bowen Bowen-Jones' motion should be referred to the Special Committee, and that it should be left to them to say if they wanted any further information, rather than the Council should take a division.

Sir JOHN THOROLD having intimated his desire to press the amendment, it was put to the meeting, and, on a show of hands, defeated by 20 votes to 18.

Resolution (No. 3), proposed by Sir Bowen Bowen-Jones, was then carried.

Lord NORTHBROOK, referring to a paragraph in the Veterinary Committee's Report embodying the reply received from the Board of Agriculture to the Society's communication as to the suspension of the Compulsory Sheep Dipping Orders, said he understood that the Board had now decided to put those Orders into operation again on April 1. Mr. MIDDLETON asked that he understood that the Tuberculosis Order would be put into operation again on October 1.

Sir JOHN THOROLD, in presenting the Report of the Committee of Selection, formally moved that Mr. Ernest Mathews be appointed a Vice-President of the Society. They had to thank him for his assistance on all occasions, and for the very good work he had done for the Society. Mr. ADEANE seconded the motion, which was unanimously adopted.

Mr. ERNEST MATHEWS expressed his thanks to the Council for the great honour they had done him in electing him a Vice-President, an honour he had not for one moment expected.

Sir JOHN THOROLD also moved :—

"That a Committee be appointed, with power to add to its number, to take into consideration the letter received from the Agricultural Society of France asking the Society to assist in the restoration of agriculture in those districts which have been devastated by the war, and likewise to consider the best means for assisting the agriculturists of Belgium.

"Further, that the Committee be empowered to invite the co-operation of other societies, and to proceed with the preparation of the scheme to be laid before the Council."

He hardly thought it necessary to remind the Council that in 1871-2 the Society had taken the lead in assisting the agriculturists of France after the war. Of course the circumstances then were very different, for France was entirely overrun, while now only a portion of France was affected. They had also to consider the case of Belgium, and it would take all their efforts to afford any appreciable advantage to that country.

Sir GILBERT GREENALL seconded the motion, which was unanimously adopted.

The PRESIDENT said he entirely agreed with what Sir John Thorold had said. The matter of assisting Belgium and France was of the highest importance at the present time.

On the motion of Mr. ADEANE, seconded by Sir J. B. BOWEN-JONES, it was resolved that the following be asked to serve on the proposed Committee :—The Duke of Portland (President), the Earl of Coventry, the Earl of Powis, the Earl of Yarborough, Lord Middleton, Lord Moreton, Sir Ailwyn Fellowes, and the Chairmen of the Standing Committees.

The SECRETARY read the following letter from the Secretary of the Shropshire and West Midland Agricultural Society :—

December 14, 1914.

DEAR SIR,—I am directed to ask you to convey to the Council of the Royal Agricultural Society of England that at a meeting of the Council of the West Midland Society, held on Saturday last, December 12, a hearty vote of thanks was accorded to the Council of the Royal Agricultural Society of England for the cordial manner in which the wishes of this Council were invariably met, for the liberal concessions in the way of admission privileges to members, and for the ample accommodation provided for carrying out the Shrewsbury Championship Dog Show, thereby avoiding a break in its continuity.—I am, yours faithfully,

(Signed) THOMAS WHITFIELD, Secretary.

A letter was also read from Sir Walter Glibbey, expressing the heartfelt thanks and deep appreciation of himself and his family for the resolution of sympathy and condolence, on the death of his father, passed at the last meeting of the Council.

Other business having been transacted, the Council adjourned until Wednesday, February 24, 1915.

WEDNESDAY, FEBRUARY 24, 1915.

At a Monthly Council, held at 16 Bedford Square, London, W.C., the Duke of
PORTLAND, K.G. (President), in the Chair :—

Present :—Trustees.—H.R.H. Prince Christian, K.G., the Earl of Conwy, the Duke of Devonshire, G.C.V.O., Sir Gilbert Greenall, Bart., C.V.O., Lord Middleton, Lord Moreton, the Earl of Northbrook, Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. Adeane, Mr. Percy Crutchley, the Right Hon. Sir A. E. Fellowes, K.C.V.O., Mr. R. M. Greaves, the Hon. Cecil T. Parker, the Earl of Powis.

Other Members of the Council.—Mr. D. T. Alexander, Mr. T. L. Aveling, Mr. H. Dent Brocklehurst, Mr. Davis Brown, Mr. W. W. Chapman, the Hon. J. E. Cross, Sir Howard Frank, Mr. J. W. Glover, Lord Harlech, Mr. Jos. de Harris, Mr. W. Harrison, Sir Arthur G. Hazlerigg, Bart., Mr. R. W. Hobbs, Mr. J. Howard Howard, Mr. W. F. Ingram, Sir Charles V. Knightley, Bart., Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. W. A. May, Mr. C. Middleton, Mr. G. Norris Midwood, Mr. John Myatt, Mr. R. G. Patterson, Mr. A. W. Perkin, Mr. C. M. S. Pilkington, Mr. J. E. Rawlence, Mr. F. Reynard, the Duke of Richmond and Gordon, K.G., Lord Strachie, and Mr. A. P. Turner.

The following Members of the Nottingham Local Committee were also present :—Mr. A. W. Hickling and Councillor J. G. Small.

The minutes of the last meeting of the Council, held on January 27, 1915, were taken as read and approved.

Mr. Ernest Mathews, of Little Shardeloes, Amersham, and Captain Henry Douglas Wilkin, D.S.O., R.N., Middleton Hall, Belford, were elected as Governors of the Society, and 24 duly nominated candidates were admitted into the Society as Members under By-law 2.

Mr. ADEANE, in presenting the Report of the Finance Committee, moved :

"That the Society contribute the sum of 1,000*l.* to the Fund being raised by the Committee appointed by the Society to assist in the restoration of agriculture in France, Belgium, &c."

The Committee set up by the Council at its last meeting would meet that afternoon. He was sure the Council would agree that it was desirable the Society should show its sympathy with the movement in some practical manner, and that they should themselves make a start to relieve their fellow-agriculturists in the allied countries who had suffered so severely through the war.

The resolution was seconded by Sir GILBERT GREENALL and unanimously adopted.

The Report of the Chemical and Woburn Committee was received and adopted, including the following resolution which had been passed by the Committee :—

"The Chemical and Woburn Committee desires to express its deep regret that Sir Bowen Bowen-Jones is it is necessary to retire from the chairmanship, and to record its sense of the great services which have been rendered by Sir Bowen as Chairman of the Committee for the past fourteen years and of the progress of the work of the Woburn Experimental Station and Farm during that period. The Committee also wishes to tender him its sincere thanks for the able, kind and courteous manner in which he has always conducted the business of the Committee."

Mr. LUDDINGTON, in moving the adoption of the Chemical and Woburn Committee's Report, wished to emphasise the Committee's expression of regret on the retirement of Sir Bowen Bowen-Jones from the chairmanship. The Committee felt that much of the good work done and progress made during Sir Bowen's long tenure of office had been due to his untiring perseverance, hard work and ability, while his impartiality, courtesy and able conduct in the chair had won the esteem of his colleagues. It was a matter of satisfaction to them to know that Sir Bowen would continue to be a member of the Committee, and they trusted he would be spared for many years to give them his advice and help.

The Committee had fully recognised, from the discussion at the last meeting of the Council, that there was a great interest taken by the Council in the present and future work of Woburn generally, and his Committee wished to be known that they would gladly welcome any criticism or any suggestions from any Member, and would give them full consideration.

On the motion of Sir JOHN THOROLD, seconded by Sir GILBERT GREENALL, it was unanimously resolved:—

"That Mr. Adeane be elected a Trustee of the Queen Victoria Gifts Fund in place of the late Sir Walter Gilbey."

Other business having been transacted, the Council adjourned until Wednesday, March 31, 1915.

WEDNESDAY, MARCH 31, 1915.

At a Monthly Council, held at 16 Bedford Square, London, W.C., the Duke of PORTLAND, K.G. (President), in the Chair:—

Present:—Trustees.—H.R.H. Prince Christian, K.G., Sir J. B. Bowen-Jones, Bart., the Earl of Coventry, the Duke of Devonshire, G.C.V.O., Sir Gilbert Greenall, Bart., C.V.O., Lord Middleton, the Earl of Northbrook.

Vice-Presidents.—Mr. Adeane, Mr. Percy Crutchley, the Right Hon. Sir A. E. Fellowes, K.C.V.O., Mr. R. M. Greaves, Mr. Ernest Mathews.

Other Members of the Council.—Mr. D. T. Alexander, Mr. T. L. Arveling, Mr. H. Dent Brocklehurst, the Hon. J. E. Cross, Mr. John Evens, Sir Howard Frank, Mr. Joseph Harris, Mr. Arthur Hiscock, Mr. R. W. Hobbs, Mr. J. Howard Howard, Mr. W. F. Ingram, Mr. J. L. Luddington, Mr. W. A. May, Mr. C. Middleton, Mr. G. Norris Midwood, Mr. T. H. Miller, Mr. W. Nocton, Mr. A. W. Perkin, Mr. C. M. S. Pilkington, Mr. H. F. Plampatre, Lord Rankenbough, C.V.O., C.B., Mr. F. Reynard, Mr. C. C. Rogers, Mr. Fred Smith, Col. E. W. Stanforth, Lord Strachie, and Mr. L. C. Wrigley.

Governor.—Mr. Beville Stanier, M.P.

The following Members of the Nottingham Local Committee were present at the meeting of the General Nottingham Committee on the previous day:—Councillor Mee and Councillor Spray; and Mr. A. W. Hicking attended the Council Meeting.

The minutes of the last meeting of the Council, held on February 24, 1915, were taken as read and approved.

Mr. F. Axillon, of 7 Tenterden Street, Bury, and Sir Herbert S. Leon, Bart., of Blotchley Park, Bucks., were elected Governors, and 20 duly nominated candidates were admitted into the Society as Members.

Mr. GREAVES, in presenting the Report of the Implement Committee, called the attention of the Chemical and Woburn Committee to a leaflet which had been handed to himself and his colleagues at the House of Commons the other day, on the occasion of the Conference on the subject of Demonstrations of Labour-saving Machinery. The document he referred to was Special Leaflet No. 25, issued by the Board of Agriculture. It began by stating that farmers required a great deal of advice on various matters, and it went on to explain the system by which the whole of the country is divided into provinces and as to how advice could be obtained. It also referred to researches that were being made, and mentioned a number of institutions, but not a word was said about the Society's Experimental Station at Woburn. He thought it was a great pity.

Mr. ADEANE thought the Council ought to call the attention of the Board of Agriculture to the omission.

Mr. LUDDINGTON accordingly formally moved that the attention of the Board of Agriculture be drawn to the matter. This was seconded by Mr. ADEANE, and passed unanimously.

In presenting the Report of the Committee of Selection—which was received and adopted—Lord MIDDLETON said he was sure the Council would

allow him to allude for a moment to the death, at the great age of ninety-seven, of Mr. Tom Parrington, who for very many years had been a great factor in the agricultural world. Mr. Parrington was Secretary first of the Cleveland Agricultural Society, and later of the Yorkshire Agricultural Society. Many innovations at shows were introduced by him, amongst which would be remembered the offering of prizes for horse jumping. He instituted at the Yorkshire Show the giving of prizes for foxhounds, and this was taken up subsequently by the Peterborough Agricultural Show, and had continued to the present time as the "Hound Show" at Peterborough. For some years Mr. Parrington was Master of the Sinnington Hounds, and his loss would be greatly regretted by agriculturists all over the country. His Lordship added that Mr. George Scoby would attend the funeral that day on behalf of the Royal Agricultural Society.

Other business having been transacted, the Council adjourned until Wednesday, May 5, 1915.

WEDNESDAY, MAY 5, 1915.

At a Monthly Council, held at 16 Bedford Square, London, W.C., the Duke of PORTLAND, K.G. (President), in the Chair:—

Present:—Trustees.—The Duke of Devonshire, G.C.V.O., Sir Gilbert Greenall, Bart., C.V.O., Lord Moreton, the Earl of Northbrook, Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. Adeane, Mr. Percy Crutchley, Mr. Ernest Mathews, the Hon. C. T. Parker, the Earl of Powis, the Earl of Yarborough.

Other Members of the Council.—Mr. T. L. Aveling, Mr. H. Dent Brocklehurst, Mr. Davis Brown, Mr. Richardson Carr, Mr. W. W. Chapman, Mr. J. T. C. Eadie, Mr. John Evens, Mr. James Falconer, Sir Howard Frank, Mr. J. H. Hine, Mr. R. W. Hobbs, Mr. J. Howard Howard, Mr. W. F. Ingram, Sir C. V. Knightley, Bart., Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. W. A. May, Mr. C. Middleton, Mr. G. Norris Midwood, Mr. W. Nocton, Mr. A. W. Perkin, Mr. C. M. S. Pilkington, Mr. H. F. Plumptre, Mr. F. Reynard, Mr. C. C. Rogers, Lord Strachie, Mr. C. W. Tindall, Mr. J. Bell White, Mr. C. W. Wilson, and Mr. L. C. Wrigley.

Governor.—Mr. Beville Stanier, M.P.

The following Members of the Nottingham Local Committee were present at the meeting of the General Nottingham Committee on the previous day:—The Mayor of Nottingham (Alderman J. H. Gregg), Alderman Sir John T. McCraith, Councillor J. G. Small, and Mr. W. J. Board (Hon. Local Secretary); and Earl Manvers and Councillor J. G. Small attended the Council Meeting.

The **PRESIDENT**, before proceeding to the formal business of the meeting, said he did not think he would be fulfilling the wishes of the Members of the Council if he allowed that opportunity to pass without making some sincere reference to the great loss which the world in general, and agriculture in particular, had sustained by the death of Lord Rothschild, a very eminent man in every walk of life, who had devoted much of his time to the successful encouragement of the highest forms of agriculture. It was not necessary to enter in detail into the great assistance which he had given to the different branches of that industry; that was very well known to everyone who took an interest in it, or who gained his living in agricultural employment. Their Society had very often had the benefit to the full of his knowledge and of his kindness. On many occasions he came to its assistance in a most generous manner, and he always showed that he was greatly interested in all its transactions. For that reason—his Grace said—he had ventured to make this allusion to the loss which they, in common with the world in general, had sustained, and he felt in doing so he was in sympathy with the Council's wishes. He ventured to move the following resolution:—

"That the Council regret the loss they have sustained by the death of Lord Rothschild, whose generous assistance on many occasions has been of the greatest benefit to the Society and to the cause of agriculture generally. They desire to express their sincere sympathy with Lady Rothschild and the family in the bereavement they have sustained."

Mr. ADEANE seconded the motion, the Members of Council signifying their assent by rising in their places.

The minutes of the last meeting of the Council, held on March 31, 1915, were taken as read and approved.

Lt.-Col. R. Leslie Birkin, D.S.O., Edale House, The Park, Nottingham, Mr. Alfred C. King, Braishfield Manor, Romsey, Hants., the Hon. Mrs. E. A. Canfield Lister, Farndon, Newark-on-Trent, Mr. F. Hamlyn Price, 11 Ormonde Terrace, Regent's Park, N.W., and Sir John Robinson, Worksop Manor, Notts., were elected as Governors, and 20 duly nominated candidates were admitted into the Society as Members.

The PRESIDENT presented a report on the progress of the work of the Agricultural Relief of Allies Committee from the time of its initiation until the present date. The report, the President said, explained what had been done by the Executive Committee, and he had been requested by that body to ask every Member of the Royal Agricultural Society to give them his hearty co-operation and support in the great task which was before them.

Mr. ADEANE was sure they all realised that in undertaking to assist in the restoration of the agriculture of the countries of the Allies they had taken on a very big job. He was certain, however, that to carry it out successfully all that was required were energy and organisation, for the generosity and sympathy of this country was well known, and it was sure to rise to the occasion. The organisation was being carried out energetically in the different countries, and he would like to urge the Council, and through them the Members of the Society, that they should do everything they could in the countries to help on the movement. Several of the countries were not yet fully organised so far as the collection of subscriptions was concerned, but he might say that Cambridgeshire, which was purely agricultural, had already collected a sum of over £3000.

The report of the General Nottingham Committee was received and adopted, including a scheme for the offer of Prizes and Certificates of Merit in a Milk Competition open to farmers residing within the area covered by the Nottinghamshire Agricultural Society who supply milk to Nottingham daily.

On the motion of the Earl of NORTHBROOK, seconded by Mr. ALFRED MANSELL, the following resolution was unanimously passed:—

"The Council desire to call the attention of the Board of Agriculture to the fact that, although negotiations with the Argentine Government have been in progress for many months past with reference to the modification of the regulations governing the exportation of live stock from this country to the Argentine, no satisfactory result appears to have been arrived at, and would impress upon the Board the importance of immediate steps being taken to expedite matters in view of the near approach of the usual shipping season."

In presenting the report of the Stock Prizes Committee—which was received and adopted—Mr. REYNARD made reference to the case of the Member who had been expelled from the Shorthorn Society for a gross fraud, which had been proved against him in a court of law. In accordance with By-law 16, a request for the dismissal of the person in question from the Royal Agricultural Society had been signed by the requisite number of Members, and was posted on the wall of the Council Chamber.

On the motion of the PRESIDENT, seconded by Mr. CRUTCHLEY, it was unanimously resolved:—

"That the Council, and it is believed the majority of exhibitors, deprecate most strongly the custom of the gratuitous giving of alcoholic liquors at the stands of exhibitors."

It was unanimously resolved, on the motion of Sir JOHN THOROLD, seconded by Sir GILBERT GREENALL:—

"That his Grace the Duke of Portland be elected a Vice-President to fill the vacancy caused by the death of Lord Rothschild."

The Duke of PORTLAND expressed his thanks to the Council for the further honour which they had conferred upon him. He had thought it a great honour to be appointed President for the present year, but he considered it a still greater honour that the Council wished him to be a Vice-President. So long as he lived he would be glad to do all he could for the Society, which he trusted would continue to prosper and flourish.

The PRESIDENT, at this stage, said he was glad to see that they had with them that day Mr. J. Bell White, the newly elected Member of Council for the division of Buckinghamshire. On behalf of the Council, he tendered to him a cordial welcome to their deliberations. In acknowledgment, Mr. BELL WHITE said nothing would be wanting on his part to keep agriculture in Buckinghamshire up to the present high standard.

WEDNESDAY, JUNE 9, 1915.

At a Monthly Council, held at 16 Bedford Square, London, W.C., the Duke of PORTLAND, K.G. (President), in the Chair:—

Present:—Trustees.—Sir J. B. Bowen-Jones, Bart., the Earl of Coventry, Sir Gilbert Greenall, Bart., C.V.O., Lord Moreton, the Earl of Northbrook, Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. Adeane, Mr. Percy Crutchley, the Right Hon. Sir Ailwyn E. Fellowes, K.C.V.O., Mr. R. M. Greaves, Mr. Ernest Mathews, the Hon. C. T. Parker, the Earl of Yarborough.

Other Members of the Council.—Mr. T. L. Aveling, the Hon. John R. de C. Roscawen, Mr. H. Dent Brocklehurst, Mr. Davis Brown, Mr. Richardson Carr, Mr. W. W. Chapman, the Hon. John E. Cross, Sir Howard Frank, Lord Harlech, Mr. Joseph Harris, Mr. John Howard Howard, Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. C. Middleton, Mr. G. Norris Midwood, Mr. W. Necton, Mr. A. W. Perkin, Mr. C. M. S. Pilkington, Mr. H. F. Plumptre, Lord Banksborough, Mr. G. G. Rea, Mr. F. Reynard, the Duke of Richmond and Gordon, K.G., Mr. C. C. Rogers, Mr. Fred Smith, Mr. C. W. Tindall, and Mr. J. Bell White.

Governors.—Mr. W. F. Holt Beever, Mr. F. Hamlyn Price, and Mr. Beville Stanier, M.P.

The following Members of the Nottingham Local Committee were present at the meeting of the General Nottingham Committee on the previous day:—The Mayor of Nottingham (Alderman J. H. Gregg), Councillor J. G. Small, Mr. T. Warner Turner, and Mr. W. J. Board (Hon. Local Secretary); and Earl Manvers and Councillor J. G. Small attended the Council meeting.

The minutes of the last Council meeting, held on May 5, 1915, were taken as read and approved.

The PRESIDENT, before proceeding with the business on the agenda paper, said he was sure that he would be acting in conformity with the unspoken wishes of all the Members of the Council if he gave sincere expression to the very great regret they all felt at the loss the Society had sustained by reason of the death of their colleague, the Earl of Jersey.

Lord Jersey was a man eminent in many walks of life, who had gained distinction as a statesman and as an administrator, as well as an agriculturist. In his younger days he was equally well known as an athlete, and, at the same time, he was an English gentleman of the highest type.

He was one of the oldest and most highly respected Members of their Council, to which he had been elected as long ago as 1883. He resigned his position seven years later when he became Governor-General of New South Wales, but, on his return to England in 1894, he was again elected to their Council, becoming a Vice-President in 1903, a Trustee in 1908, and President in 1909, when the Show was held at Gloucester.

He had always taken a very keen interest in agricultural and rural affairs, and had been of considerable help in connection with the Society's Journal.

During the last few years of his life, failing health prevented his attendance at their meetings, but his former services were gratefully and appreciatively remembered.

He felt sure, therefore, that the Council would wish to convey to the Countess of Jersey and the members of her family an expression of their deep sympathy with her and with them in their bereavement, and that they should put on record their sense of loss which the Society had sustained.

He therefore begged leave to move a resolution to that effect, which was unanimously passed, all the Members standing.

The PRESIDENT read the following letter from Lady Rothschild :—

DEAR DUKE OF PORTLAND,

Pray accept my best thanks for your kind letter of sympathy, for which I am very grateful. I also hope you will convey to the Members of the Council of the Royal Agricultural Society of England my sincere thanks for their vote of condolence, and assure them how much I value their remembrance and appreciation of Lord Rothschild's work for the Society.

I remain, yours sincerely,

(Signed) E. L. ROTHSCHILD.

The following were elected as Governors :—Mr. Edwin Clay Barnes, Asbgate Lodge, Chesterfield, Mr. Walter Black, Elton Manor, Notts., Mr. Henry M. Gray, Broompark, Duffield, Derby, Mr. Charles Markham, Ringwood, Chesterfield, Mr. Edward Perkins, Highfields, Melton Mowbray, Mr. James McClymont Reid, Cleeve Grange, Bishops Cleeve, Glos., Lord Ernest St. Maur, Burton Hall, Loughborough, Mr. Harry Spray, 130, Foxhall Road, Nottingham, Sir John Turney, Gedling House, Gedling, Notts.; and 92 duly nominated candidates were admitted into the Society as Members.

On the motion of Mr. ADEANE, seconded by Sir JOHN THOROLD, it was unanimously resolved :—

"That the Secretary be empowered to issue to any duly nominated candidate for membership of the Society, on receipt of the annual subscription, a badge admitting the candidate to the same privileges as a Member during the forthcoming Show at Nottingham; the formal election of such candidate to be considered by the Council at their next ordinary meeting."

On the motion of the Earl of NORTHBROOK, seconded by Mr. ALFRED MANSELL, it was unanimously resolved that :—

"The Council learn with regret, since the receipt of the letter from the Board of Agriculture dated May 23, that the Decree of the Argentine Government prohibiting the importation of live stock from England and Wales into Argentina may possibly not be revoked until July 24, and they would strongly urge upon the Board that, in view of the society's Show being held at Nottingham from June 23 to July 3, it is highly desirable that the embargo should be removed at the earlier date mentioned in the letter—viz., June 24."

It was also resolved, on the motion of Lord NORTHBROOK, seconded by Mr. DAVIS BROWN :—

"That in view of the continued unsatisfactory returns with regard to swine fever, the Council urge on the Board of Agriculture the desirability of adopting the system in force in the County of Suffolk for dealing with the movement of swine, and of making such system universal throughout the country."

Lord NORTHBROOK read the following letter received that morning from the National Sheep-Breeders' Association :—

June 9th, 1915.

DEAR SIR.—The following resolution was unanimously passed at the meeting of the Executive Committee of the above Association held yesterday afternoon, and I was directed to ask you to be good enough to bring the same before your Council meeting this morning :—

Resolved :—"That the National Sheep-Breeders' Association desires to call the attention of the Board of Agriculture and Fisheries to the serious depletion of the sheep stock of this country, by the sale for slaughter of ewes and ewe lambs which in the ordinary course would be used for the replenishment of the breeding flocks, and asks that the Board of Agriculture and Fisheries should take immediate steps to prevent the continuance of such practice."

I remain, yours faithfully,

(Signed) WALTER WM CHAPMAN.

This was a matter, his lordship said, of such great importance that he felt it his duty to bring the question before the Council in order that they might have an opportunity of expressing their views upon it. Possibly they might consider it advisable to express their approval of the resolution passed by the National Sheep-Breeders' Association, or to make some representations to the Board of Agriculture on the matter. He might mention that Lord Charnwood had given notice in the House of Lords that he would put a question to the President of the Board of Agriculture on the subject that afternoon. However, the question had been postponed at the request of Lord Selborne, and he understood that had been done because the Board wished to have the opportunity of giving the matter further consideration.

After some discussion, in which Mr. MANSELL, Sir AILWYN FELLOWES, Mr. G. G. REA, Mr. CHRISTOPHER MIDDLETON, Mr. W. W. CHAPMAN, Mr. C. W. TINDALL, and Lord NORTHBROOK took part, it was resolved, on the motion of Sir AILWYN FELLOWES, seconded by Mr. TINDALL:—

"That the letter from the National Sheep-Breeders' Association be referred for consideration to the Veterinary Committee."

The SECRETARY reported that the Trustees of the "Queen Victoria Girls' Fund had decided to make a grant to the Royal Agricultural Benevolent Institution of 140*l.* for the year 1915, to be distributed as fourteen grants of 10*l.* each to the five male candidates, five married couples, and four female candidates who polled the largest number of votes in their class, and who would not this year receive grants from any other fund in connection with the Royal Agricultural Benevolent Institution.

Mr. REYNARD moved that the member whose name he had given at the last Council meeting be dismissed from the Society for the reasons he had then explained. All the preliminary steps for such dismissal had been taken in accordance with clause 16 of the by-laws. The Hon. CEDIL PARKER seconded the motion, which was unanimously carried.

Other business having been transacted, the Council adjourned until Wednesday, June 30, in the Nottingham Showyard.

WEDNESDAY, JUNE 30, 1915.

At a Monthly Council, held in the Nottingham Showyard, the Duke of PORTLAND, K.G. (President) in the Chair:—

Present:—Trustees.—Sir Gilbert Greenall, Bart., C.V.O., Lord Middleton, the Earl of Northbrook, the Hon. C. T. Parker, Sir John Thorold, Bart.

Vice-Presidents.—Mr. C. R. W. Adeane, Mr. Percy Crutchley, the Right Hon. Sir Ailwyn E. Fellowes, K.C.V.O., Mr. R. M. Greaves.

Other Members of the Council.—Mr. D. T. Alexander, Capt. Clive Bohrens, the Hon. John R. de C. Boscawen, Mr. H. Dent Brocklehurst, Mr. Davis Brown, Mr. Thomas A. Buttar, Mr. R. G. Carden, Mr. W. W. Chapman, the Hon. J. E. Cross, Mr. J. T. C. Eadie, Mr. John Evens, Mr. J. Falconer, Mr. W. T. Game, Mr. J. W. Glover, Lord Harlech, Mr. Joseph Harris, Mr. W. Harrison, Mr. J. H. Hine, Mr. Arthur Hiscock, Mr. R. W. Hobbs, Mr. J. Howard Howard, Mr. W. F. Ingram, Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. Wm. A. May, Mr. Christopher Middleton, Mr. G. Norris Milwood, Mr. T. H. Miller, Mr. J. Myatt, Mr. W. Nocton, Mr. Henry Overman, Mr. A. W. Perkin, Mr. C. M. S. Pilkington, Mr. G. G. Rea, Mr. F. Reynard, Mr. C. C. Rogers, Mr. John Rowell, Mr. Fred Smith, Mr. C. W. Tindall, Mr. A. P. Turner, Mr. J. Bell White, Col. C. W. Wilson and Mr. Louis C. Wrigley.

Governor.—Mr. F. Hamlyn Price.

The Minutes of the last Monthly Meeting of the Council held at 14 Bedford Square, London, W.C., on Wednesday, June 9, 1915, were taken as read and approved.

Mr. ADEANE reported that a special meeting of the Finance Committee had been held in the Showyard on the previous day to consider what effect the

new War Loan would have on the finances of the Society. Having considered the matter, they recommended that the Committee be empowered to convert the Consols held in the name of the Society and various Trustees into 4½ per cent. new War Loan Stock, and that the Chairman, the Rt. Hon. Sir Ailwyn E. Ffellowes and the Earl of Northbrook be appointed a Sub-Committee, with power to carry the proposal into effect.

In presenting this report to the Council, Mr. ADEANE said the reason why it was so desirable to convert the Society's large holding of Consols was that the position of Consols at the present moment was very unstable. The average cost to the Society of their Consols had been about 83½; they now stood at the minimum price fixed—viz., 65. They had heard from the Chancellor of the Exchequer that it was probable that the effect of the War Loan would be to drive them down several more points. If the war continued, and the Government had to go to the country again for money, it was quite on the cards that they would have to pay a higher rate of interest, with the inevitable result that Consols would decline still further. That being the position, he thought the Council should agree to convert their holding of Consols and cut their losses clean.

In order to convert 75½ Consols, it would be necessary to buy 100½ War Loan, so that to convert the Society's holding of 72,239½ Consols nominal, they would have to buy 96,500½ of the new War Loan. That was their difficulty, for they had no spare cash. Realising this, he had been to the Society's bankers—the London County and Westminster Bank—and they had promised to advance the money in order to carry out the conversion, and they would finance the operations. Of course, the Society would have to give over the securities now held. The nominal value of these securities was as follows:—53,113½ Consols, which appeared in the balance sheet; 11,000½ Consols, put aside, in the hands of the Trustees, for the Insurance Fund; 8,126½ Consols—the Hills' Bequest; 4,528½ Canadian 4 Per Cent. Stock; 2,840½ Metropolitan 3 Per Cent. Stock; giving a total of 81,607½.

They had got to buy 96,500½ of the War Loan, and this would be held by the bank as a security until liquidated. They would go to the bank, for say, 96,000½, and that would enable them to convert the holding of Consols; then they would sell out as much as necessary of the new War Loan Stock and repay the bank.

He would like to explain the result of the conversion on the finances of the Society. They could convert 75½ Consols into 50½ of the new War Loan, so that the 72,239½ Consols could be converted into 48,160½ War Loan. The income from Consols had been 1,805½ a year; but the income after conversion would be 2,167½, so that their income would be increased by about 36½ a year. That sounded satisfactory, but, of course, they would have to face great loss in value of securities. He treated the Hills' Bequest investment separately. In that case Consols had been bought at 110.

There would be a total drop in capital of between 14,000½ and 15,000½, and he would like to make the suggestion that they should be satisfied with the income that they had always received from their Consols, and not spend the 360½ per year extra income they would receive after conversion, but should use it as a sinking fund, and so put the affairs of the Society in a few years better, so far as capital was concerned, to where they originally stood.

The matter would come up again, and all they asked was to be allowed to proceed with the conversion.

He would like to propose the addition of Mr. G. Norris Midwood to the Sub-Committee, the appointment of which was recommended by the Finance Committee.

The matter was one of urgency, as they must make application for the new stock before July 10.

The PRESIDENT, having inquired if any Member of the Council wished to ask a question, a discussion ensued, in which Mr. LUDDINGTON, Mr. MIDWOOD,

Mr. ADEANE, Mr. BELL WHITE, Mr. CRUTCHLEY, Mr. BROCKLEHURST, and Mr. WRIGLEY took part.

The Report of the Finance Committee was then adopted.

On the motion of Sir JOHN THOROLD, seconded by Sir GILBERT GREENALL, Bart., it was unanimously resolved :—

1. That the Hon. Cecil T. Parker be elected a trustee in the room of the late Earl of Jersey.
2. That the Duke of Richmond and Gordon be elected a vice-president.

Mr. LUDDINGTON (Chairman of the Chemical and Woburn Committee) reported that arrangements were being made for the annual visit of Members of Council to Woburn on July 28. He asked any of those present who wished to join the party to give their names to Dr. Voelcker.

On the motion of the Hon. JOHN BOSCAWEN, seconded by Mr. ROGERS, it was resolved that the Report of the Dairy this year be printed at once and circulated amongst Members of Council and the dairy committees of the different County Councils.

On the motion of Mr. ADEANE, seconded by Sir GILBERT GREENALL, Bart., it was resolved, "That the best thanks of the Society are due and are hereby tendered to :—

1. The Officials of the General Post Office for the efficient postal arrangements.
2. The Chief Commissioner of Police for the efficient services rendered by the detachment of Metropolitan Police on duty in the Showyard.
3. The Chief Constable of Nottingham for the efficient police arrangements in connection with the Show.
4. The Chief Constable of Nottinghamshire for the efficient police arrangements in connection with the Show.
5. The St. John Ambulance Brigade, Nottingham, for the efficient Ambulance arrangements.
6. The Union of London and Smith's Bank, Nottingham, for the efficient services rendered by their officials.
7. Messrs. Merryweather & Sons, Ltd., for the provision of Fire Engines and for the efficient arrangements in connection with the Fire Station in the Showyard.
8. Messrs. Henry Barker, Ltd., for decorating and furnishing the Royal Pavilion.
9. Messrs. C. J. Mee & Son, for providing Floral Decorations."

Letters of thanks were also ordered to be sent to various other individuals and firms for assistance kindly rendered and for the loan of articles for the purposes of the Show.

The Council then adjourned until Wednesday, July 28, 1915, at 16 Bedford Square, London, W.C., and in view of the visit to Woburn on that day it was agreed that the Council meeting should be held at 10.30 a.m.

Proceedings at General Meeting of Governors and Members,

HELD IN THE
LARGE TENT IN THE SHOWYARD AT NOTTINGHAM.

WEDNESDAY, JUNE 30, 1915.

THE DUKE OF PORTLAND, K.G. (PRESIDENT), IN THE CHAIR.

Amongst those present on the platform were Sir Gilbert Greenall, Bart., C.V.O., Lord Middleton, the Earl of Northbrook, Sir John H. Thorold, Bart., Mr. C. Adeane, Mr. Percy Crutchley, the Rt. Hon. Sir Ailwyn Ffellowes, K.C.V.O., Mr. R. M. Greaves, the Hon. Cecil T. Parker, Mr. D. T. Alexander, the Hon. John R. de C. Boscawen, Mr. H. Dent Brocklehurst, Mr. Davis Brown, Mr. T. A. Buttar, Mr. R. G. Carden, Mr. W. W. Chapman, the Hon.

John E. Cross, Mr. J. T. G. Eadie, Mr. John Evens, Mr. James Falconer, Mr. W. T. Garne, Mr. J. W. Glover, Lord Harlech, Mr. Joseph Harris, Mr. William Harrison, Mr. J. H. Hine, Mr. A. Hiscock, Mr. H. W. Hobbs, Mr. J. Howard Howard, Mr. W. F. Ingram, Mr. J. L. Liddington, Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. W. A. May, Mr. Christopher Middleton, Mr. G. Norris Midwood, Mr. T. H. Miller, Mr. J. Myatt, Mr. W. Nocton, Mr. H. Overman, Mr. A. W. Perkin, Mr. C. M. S. Pilkington, Mr. George Grey Rea, Mr. Frederick Reynard, Mr. C. Colman Rogers, Mr. John Rowell, Mr. Fred Smith, Mr. C. W. Tindall, Mr. Arthur P. Turner, Mr. J. Bell White, Mr. C. W. Wilson, Mr. Louis C. Wrigley.

The following Members of the Nottingham Local Committee were also present:—The Mayor of Nottingham (Alderman J. H. Gregg), Earl Mauvers, Mr. A. W. Hickling, Mr. Councillor J. G. Small, Capt. E. Kyrle Smith, Mr. T. Warner Turner, Mr. W. H. Bradwell (Hon. Local Secretary).

There was also a large attendance of Governors and Members in the tent.

President's Opening Remarks.

The Duke of PORTLAND said: My Lords, Ladies and Gentlemen,—By the kindness of Lord Middleton we are to-day holding our Show in his charming park, and the grant of this splendid ground is another of the many valued services he has rendered to the Royal Agricultural Society. He has twice held office as our President, and on the second occasion, three years ago, when in that capacity he was speaking at Doncaster, he said that the Show was then being held under, perhaps, the most remarkable circumstances that had occurred in the history of the Society. He referred to the closing of that section of the Show comprising cattle, sheep and pigs, in consequence of the outbreak of foot-and-mouth disease.

This year we are met in circumstances still more remarkable—perhaps the most remarkable that have occurred in the course of history, certainly the most remarkable of modern times—for we meet when the greatest war the world has ever seen is being waged, and when our country is engaged in a struggle of unexampled magnitude and severity, and—it is no use blinking the fact—at a time when the fate of the nation is hanging in the balance. But, however severe the crisis may be, we must face the situation and the future not only with a stern and solemn resolve to be victorious, but, as far as possible, in a reasonably optimistic spirit.

By this time no one can fail to realise the tremendous and absolutely vital nature of the contest, and few people, if any, now expect the war to be other than one of long duration, and of slow attrition of the forces engaged. I think we have every reason to hope that in process of time we may wear the enemy down, and there is no need for despondency; but at the same time there is every need for every man in the nation to do his very best. (Applause.) The duty of one person lies in one direction, the duty of another person lies in another direction, but each one of us must do something. There is no room for slackers in any class; and, gentlemen, it is, I conceive, the special duty of those who are engaged in agriculture to use all their skill and all their energy to produce and to conserve the nation's food, whether it be in the form of cereals or live stock.

Although at one time some of us in this district were doubtful whether it was advisable to hold the Show this year, I am yet very glad that it was decided to do so, and I trust that the general opinion of the agricultural world will be that the Council and the Nottingham people did the right thing when they determined to proceed with it, notwithstanding the war.

Nottingham, until a few years ago, held the record of the largest one day's attendance at the Royal Show; but, of course, this year we cannot hope to establish a record. I may incidentally state that the attendance yesterday was larger than the attendance has been on some recent occasions. We may, however, I trust, congratulate ourselves on what may be considered, in the

circumstances, a very excellent number of exhibits, and the class of the animals is exceedingly high, which I consider is the great result to be aimed at. Although the number of entries is considerably less than it has been for the last few years, it is, on the other hand, considerably in excess of what it was when the Show was held at Nottingham twenty-seven years ago. The figures, including poultry and produce, then were 2,659; they now are 4,041.

We may also congratulate ourselves on the very admirable arrangements made by Sir Gilbert Greenall, Mr. McRow, the Stewards, the Local Committee, and all who have worked with them.

It is a matter for regret that His Majesty the King was unable to visit the Show, but His Majesty has proved the continuance of his great interest in agriculture and in the Society by the number of his exhibits. There are thirty-eight of them, and, as usual, some have been successful in winning prizes. I would mention specially the fine champion heifer Windsor Gown. I am sure it is a great pleasure to all interested in agriculture that His Majesty has gained this championship in Shorthorns; but, while we are all glad, there is nothing in this to occasion surprise—in fact, it is the invariable custom for the animals kept on the Royal farms to be noted for their excellence.

We are all much pleased to see for the first time the name of the Prince of Wales in the list of exhibitors, and we trust that before long His Royal Highness may become more closely identified with the Society, thus following in the steps of his Royal ancestors. He recently came of age, and is playing the part of a man and a soldier in Flanders. (Loud applause.)

There is one very important matter which I think I should mention—namely, the agricultural relief of our Allies. A fund for this purpose was initiated by the Society, and has received the approval of agriculturists generally throughout the country. The County Agricultural Societies have co-operated with the Royal Agricultural Society in their efforts to carry out the objects for which the Agricultural Relief of Allies Committee was appointed. There is an office near the post-office in the centre of the Showyard, where the Hon. Treasurer and other officials will be pleased to welcome all interested in this work, and to afford them every information and assistance. A collection for the fund in the Show-ground has been organised, and small souvenir flags are on sale. Every one connected with it hopes that this movement will be warmly supported.

The National Terrier Dog Show, which is being held in our grounds on Thursday and Friday, will, I am sure, be highly popular. We in Nottinghamshire know the great interest the Duchess of Newcastle takes in the National Terrier Club, and I am certain all will wish that the exhibition this year may be a great success.

I yesterday had an opportunity of visiting the Horticultural Exhibition in these grounds, and I must say I was much struck by its excellence and by the beauty of the flowers. I venture to congratulate all concerned on the very fine exhibition.

My lords, ladies and gentlemen, I thank you for the kind and courteous way in which you have listened to me. (Applause.)

Prizes for Farms.

At the request of the **PRESIDENT**, the **SECRETARY** then read the awards of the Judges of the Competition for the best managed farms in Nottinghamshire, Derbyshire, and Leicestershire. (See official awards in appendix.)

Report of the Results of the Farmers' Milk Competition.

The **SECRETARY** also read the following report of the results of the **Farmers' Milk Competition**:—

Out of 103 entries for this competition, which was instituted by the **Stead** of Nottingham (Mr. Councillor Small), the milks from 98 herds were sampled and analysed in the Nottingham City Health Department laboratories, under the superintendence of Dr. Philip Boobyer and Mr. P. W. Watson.

Five competitors were ineligible, as the milk was not supplied to Nottingham in accordance with the conditions governing the competition.

The samples were taken during the period of three weeks between the 11th and 25th June. In no case was a competitor aware when his milk would be sampled.

The regulations governing the points were as follows:—

4 points for 1 per cent. of fat.

2 points for 1 per cent. of solids other than fat.

15 points as a maximum for the cleanliness of the milk.

Milk showing less than 3 per cent. of fat and 8·5 per cent. of solids other than fat, or not gaining 10 points for cleanliness, will be disqualified.

The disqualification of one sample of milk will debar the competitor from receiving a prize or certificate of merit.

During the whole of the sampling period drought prevailed throughout the district. For the first eight days the mean of the maximum temperature was 72·8, and that for the latter half of the period was 65·7, which is more than 7 degrees below that of the earlier period.

During the first week the prevailing winds were west or south-west, and during the latter part of the time they were almost consistently north-east.

Much of the milk sent in had not been cooled, which omission very materially affected the points given for cleanliness, several milks being disqualified for "bacterial content," as the high temperature of such milks would favour the growth of the "bacterial flora." But for this, nearly all of the competitors would have received certificates of merit.

The prize in Class 1, for competitors sending in 31 gallons of milk and over to the city of Nottingham daily, was won by Samuel North, Trent Lane Farm Dairy, Sheinton.

The prize in Class 2, for competitors sending in 30 gallons of milk and under to the City of Nottingham daily, was won by T. H. Aram, Dunkirk House, Montpelier Road, Dunkirk.

Certificates of merit were awarded to the following:—R. Pole Allsbrook, T. and J. Allsopp, W. N. Bissell, William Brewill, Wm. A. Buchanan, A. E. Chamberlain, A. H. Crawford, W. Septimus Gadd, Joseph B. Greaves, Walter Green, C. John Harwood, Henry Heath, Alfred Holland, Oswald Kirk, F. C. Moss, T. Benjamin Moss, Leonard Nation, Thos. Oliver, F. Peet, John P. Poole, John Bolton, William Paul Brett, Bycroft Bros., J. C. Fisher, Arthur Gillott, Edward James, J. W. North, John Robb, John Smith, W. Somes Staton, Henry Whitlam, W. Whitney.

That the milk, on the whole, was of excellent quality is shown from the following averages:—98 herds of cows averaged 3·67 per cent. of fat, with 9·10 per cent. of solids not fat.

In Class 1, 72 herds of cows averaged 3·63 per cent. of fat, with 9·13 per cent. of solids not fat.

In Class 2, 26 herds of cows averaged 3·77 per cent. of fat, with 9·01 per cent. of solids not fat.

The thanks of the Royal Agricultural Society are due to Dr. Philip Boobyer for the pains he has taken in the matter, and also to Mr. P. W. Watson for the great care he has exercised in taking the samples of milk.

Thanks to Mayor and Corporation.

The Earl of NORTHBROOK said the successful arrangements in connection with the annual shows of the Society were necessarily, to a great extent, dependent on the Council establishing and maintaining friendly and harmonious relations with the members of the local authority in the places visited and in securing their co-operation. They had been very fortunate in having received great assistance from the gentlemen who have successively occupied the position of Mayor of Nottingham during the last three years and from the members of the Corporation, and they were particularly indebted to the assistance they had

received from Mr. Alderman Gregg, who occupied the position of Mayor at the present moment. (Applause.) The Mayor and many members of the Corporation had given great assistance in coming up to London to attend the Society's meetings, and the suggestions they had made and the help they had given had been most valuable. It was perhaps invidious on that occasion to mention any names of the Corporation, but among others to whom they were very much indebted was the Town Clerk, and he would like to make one exception, and that was to offer his congratulations to Mr. Sheriff Small on the success of the Farmers' Milk Competition, which that gentleman had been instrumental in instituting. (Hear, hear.) This was a new idea so far as the Society was concerned, and entirely originated with Mr. Small, who deserved credit for the enterprise. He (the speaker) confessed that the success it had met with surpassed his expectations, and he thought that it also surpassed those of Mr. Small. It was most satisfactory that there had been such a large number of entries, and, as they had heard from the Report just read, that the milk showed such good quality and cleanliness. This was certainly most creditable to the farmers who supplied that milk, and, he hoped, a matter of satisfaction to the people in Nottingham who consumed it. He hoped that the competition would have good results from an educational point of view. Certain of the samples were disqualified for bacterial content on account of a little carelessness in not cooling the milk. He hoped in the future this would be remedied, and that consumers in Nottingham would receive a better supply even than at present. He had much pleasure in proposing, "That the best thanks of the Society are due and are hereby tendered to the Mayor and Corporation of Nottingham for their cordial reception of the Society."

SIR ALLWYN FELLOWES had great pleasure in seconding the motion. After what had been said, and rightly said, by Lord Northbrook as regards the work of the Mayor and Corporation, there was little for him to add. This, however, he would say, that in these exceptional times in which the Show was being held he did not think any body of men could have done more to help on the success of the Show than the Mayor, Corporation, and the people of Nottingham. Knowing that, he was very grateful to them, and, on behalf of the Society, wished to thank them for the good work they had put in during the last two years. (Applause.)

THE MAYOR OF NOTTINGHAM, in acknowledgment of the vote, said that, on behalf of the city, he much appreciated the kind words spoken by Lord Northbrook and Sir Allwyn Fellowes. In his opinion the Society deserved the thanks of the Corporation for the courage they had displayed in coming to Nottingham. Despite the weather, he believed the attendance on the first day was larger than it had been on the corresponding day at two or three previous Shows. There were certainly a good many people away owing to the war, but he believed, if the weather was propitious, that there would still be good attendances. He congratulated the Society on the excellence of the exhibits brought together. In periods of depression they must display courage, and in holding their great Show this year the Council of the Society were providing an excellent object-lesson for agriculturists throughout the country.

He hoped that at the end of the Show there would be no regrets on the part of the Society in having visited the city of Nottingham.

Thanks to Local Committee.

SIR GILBERT GREENALL said the resolution he had to propose was, "That the best thanks of the Society are due and are hereby tendered to the Nottingham Local Committee for their exertions to promote the success of the Show." Perhaps this year, owing to the curtailment of things, the Local Committee had not had quite as much to do, but what work there was had been thoroughly well done, and they had given him every possible assistance in their power. He did not think that he could refer to the efforts of the Local Committee without mentioning the name of one gentleman, Mr. Bradwell, who had

worked indefatigably for the success of the Show (applause), and who, through his Society, the Notts. Agricultural Society, had raised a sum of nearly £500, as a present to the Royal Agricultural Society. They greatly appreciated that, and he was sure they would find it very useful in running the Show at this time.

The Hon. JOHN BOSCAWEN having seconded the motion, it was unanimously carried.

Thanks to Railway Companies.

Mr. JOHN ROWELL begged to move, "That the best thanks of the Society are due and are hereby tendered to the railway companies for the facilities afforded in connection with the Show." They all knew, he said, that the railway companies were just now working under great difficulties. Considering those difficulties, excellent facilities had been provided for getting exhibits to the Show.

Mr. C. M. S. PILKINGTON, in seconding, said that the first train with stock exhibits arrived to the minute and the other trains had been equally punctual. He did not, moreover, remember a Show at which the implements had been delivered on the ground in such good time as this year. It was a great help to everyone concerned when things went so smoothly, and the railway companies had carried out the whole undertaking in an admirable manner.

The resolution was adopted.

Members' Suggestions.

The PRESIDENT, having inquired if any Governor or Member had any remarks to make or suggestions to offer for the consideration of the Council.

Mr. THOMAS NESBITT (Cambridge) suggested that the Council should bring pressure to bear upon the Board of Agriculture to conserve the foodstuffs for cattle, which, he said, were being largely exported to Rotterdam just now. So far as he could see, this country would require all the foodstuffs it could produce. A large quantity of malt chives was being sent to Rotterdam. Since the war broke out Holland had become a large buyer of seeds and foodstuffs. He thought it was questionable where the foodstuffs went to. Malt chives had gone up greatly during the past year.

The President said a note had been made of Mr. Nesbitt's suggestion, which would receive careful consideration.

Thanks to President.

Mr. EDWARD OWEN GREENING said he had the honour to move a vote of thanks to their distinguished President for his services in the chair (applause) and he thought he might add their cordial recognition of the great services his Grace gave to the Society and to British agriculture. There was a joke about French gratitude—that it was "the lively expectation of further favours." He thought we had that also in our English minds, for there never was a time in the history of the country when the men who had the direction and the encouragement of agriculture had so much to do in upholding the nation as in the present crisis. As one of their oldest Members, he had seen the Society experience many ups and downs and pass through many vicissitudes. He had seen it come through times of depression to great prosperity, due to the greatest energy of their Honorary Director, Sir Gilbert Greenall, to their Secretary, Mr. Melton, and to the Members of the present Council. He would like to congratulate the Society on holding the Show this year. It would have been a great pity to have made a break in the continuity of the Shows. In the time before them, when the war was over, England would need the help of all her sons. They owed his Grace a good deal, and they looked forward to much more in the future. (Laughter and applause.)

Mr. A. S. BERRY (Lichfield) had very great pleasure in seconding the resolution. Speaking as a tenant-farmer, he desired to express their appreciation of his Grace's services. They all knew that whatever he did he always did well.

The vote of thanks having been enthusiastically accorded.

The PRESIDENT expressed his sincere thanks. He could only say that he considered it not one of the greatest but the greatest honour conferred upon him in having been asked to be President of the Royal Agricultural Society. It was an honour he was certain that any country gentleman would be only too proud and too delighted to be the recipient of. He had ventured to remark at the opening of the proceedings that it was the duty of every man to do what he could for his country, and he conceived that one man's duty lay in one direction and another's in a different direction. He perfectly agreed with Mr. Greening as to the direction in which his duty lay, and, for his part, would do all he could to support agriculture at the present time. Occupying, as he did, the two positions—President of the Royal Agricultural Society and Lord Lieutenant of the County—it was a little difficult for him to do it, but in the latter capacity, and on behalf of everyone connected with agriculture in Nottinghamshire, he welcomed the Society to their county. (Applause.)

WEDNESDAY, JULY 28, 1915.

At a Monthly Council, held at 16 Bedford Square, London, W.C., the Duke of PORTLAND, K.G. (President) in the Chair:—

Present:—*Trustees.*—Sir Gilbert Greenall, Bart., C.V.O., Lord Middleton, Lord Moreton, the Earl of Northbrook.

Vice-Presidents.—Mr. C. Adame, Mr. Percy Crutchley, Mr. J. Marshall Dugdale, the Rt. Hon. Sir Ailwyn E. Fellowes, K.C.V.O., Mr. R. M. Greaves, Mr. Ernest Mathews, the Hon. Cecil T. Parker, the Earl of Yarborough.

Other Members of the Council.—Mr. D. T. Alexander, Mr. T. L. Arding, Mr. W. W. Chapman, the Hon. John E. Cross, Mr. John Evans, Mr. J. Falconer, Sir Howard Frank, Mr. Joseph Harris, Mr. W. Harrison, Mr. Arthur Hiscock, Mr. R. W. Hobbs, Mr. W. F. Ingram, Mr. J. L. Luddington, Mr. W. A. May, Mr. G. Norris Midwood, Mr. John Myatt, Mr. W. Nocton, Mr. A. W. Perkin, Mr. H. F. Plumptre, Mr. F. Reynard, and Mr. J. Bell White.

Governor.—Mr. F. Haunlyn Price.

The PRESIDENT said it was his duty to report to the Council that he had had the great pleasure, in company with Sir Gilbert Greenall, of attending a meeting convened by the Lord Mayor of Manchester last Tuesday week. The meeting had been very influentially supported, and the proposal that the Society's Show should be held next year at Manchester was received with enthusiasm, and he thought it would receive most cordial and generous support. The Lord Mayor had expressed himself favourably towards the Society, and had been backed up by many of the leading gentlemen in Manchester and in the County of Lancaster. He had had the honour of proposing a resolution, which had been seconded by Lord Shuttleworth, Lord Lieutenant of Lancashire and unanimously carried. The resolution was as follows:—

"That this meeting cordially supports the action of the Manchester City Council in inviting the Royal Agricultural Society of England to hold their Show for the year 1916 at Manchester, and that a subscription list be opened for the purpose of meeting the requirements of the Society."

He could only add that it seemed to him that, if circumstances allowed of the Show being held next year, they would meet with every possible success at Manchester.

The minutes of the last meeting of the Council held on Wednesday, June 30th, 1915, were taken as read and approved.

Mr. Harold Thomas Ann, West Parkfields, Derby; Mr. William Eastland Ann, East Parkfields, Derby, and Sir Alfred Seale Haslam, Breadsall Priory, near Derby, were elected as Governors, and 67 duly nominated candidates were admitted into the Society as Members.

Mr. ADAME, in presenting the Report of the Finance Committee, said before the Council the Report of the Sub-Committee appointed during the Show

week to carry out the conversion of the Consols held by the Society. The sub-Committee had interviewed the manager of the London County and Westminster Bank, and had arranged for the purchase of a sufficient amount of New War Loan to enable the Society to convert their Consols into New War Loan Stock.

He also read a letter from the bank manager setting out the terms upon which the transaction would be carried through. When the loan from the bank had been paid off, Mr. Adeane said the increased income to the Society (including that of the Hill's Bequest) would amount, approximately, to 361/2 per annum.

On the motion of Mr. ADEANE, it was resolved "That in order to facilitate the winding up of the accounts for the Nottingham Show as early as possible, authority be given for the issue during the recess of orders on the Society's bankers for the payment of accounts connected with the Show."

A Report was received and adopted from the Farm Prizes Committee containing a recommendation that having regard to the scarcity of labour no Farm Competition should take place in connection with the Society's visit to Manchester in 1916.

On the recommendation of the Horticultural Committee it was decided to hold the Flower Show next year.

Other business having been transacted, the Council adjourned over the autumn recess, until Wednesday, November 3rd, 1915.

TUESDAY, OCTOBER 19, 1915.

At a Special Meeting of the Council held at 16 Bedford Square, London, W.C., the Earl of NORTHBROOK (Trustee) in the Chair.

The Seal of the Society was affixed to the Form of Request for the conversion of the Consols standing in the name of the Society into 4½ per cent. War Loan Stock, 1925-1945.

WEDNESDAY, NOVEMBER 3, 1915.

At a Monthly Council, held at 16 Bedford Square, London, W.C., the Duke of PORTLAND, K.G. (President), in the Chair:—

Present:—Trustees.—Sir J. B. Bowen-Jones, Bart., Sir Gilbert Greenall, Bart., C.V.O., the Earl of Northbrook, Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. C. R. W. Adeane, the Right Hon. Sir Ailwyn E. Fellows, K.C.V.O., Mr. R. M. Graves, Mr. Ernest Matthews, the Hon. C. T. Parker.

Other Members of the Council.—Mr. D. T. Alexander, Mr. T. L. Aveling, the Hon. J. R. de C. Boscawen, Mr. B. Dent Brocklehurst, Mr. Davis Brown, Mr. T. A. Buttar, Mr. R. G. Carden, Mr. Richardson Carr, Mr. W. W. Chapman, the Hon. John E. Cross, Sir Howard Frank, Mr. W. T. Garne, Lord Harlech, Mr. Joseph Harris, Mr. J. H. Hine, Mr. Arthur Hiscock, Mr. H. W. Hobbs, Mr. J. Howard Howard, Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. W. A. May, Mr. C. Middleton, Mr. G. Norris Midwood, Mr. John Myatt, Mr. W. Nocton, Mr. C. M. S. Pilkington, Mr. H. F. Plumptre, Lord Rank-borough, C.B., C.V.O., Mr. G. G. Rea, Mr. F. Reynard, Mr. C. C. Rogers, Mr. Fred Smith, Lord Strathie, Mr. C. W. Tindall, and Mr. J. Bell White.

Governor.—Mr. F. Hamlyn Price.

The minutes of the last monthly meeting of the Council, held on July 28, and of the Special Council held on October 19, 1915, were taken as read and approved.

Lord Belper, of Kingston Hall, Derby, and Mr. Nigel C. D. Colman, of Nork Park, Epsom Downs, were elected as Governors, and 23 duly nominated candidates were admitted into the Society as Members.

Mr. CHRISTOPHER MIDDLETON, referring to the Farmers' Milk Competition held in connection with the Nottingham Show, pointed out that of the 98 competitors 44 had been disqualified owing to their milk failing to reach the Government "standard" for fatty or non-fatty solids. An examination of the figures also showed that the average of morning's and evening's milk of every one of them had come up to the standard, but, for many reasons, it was quite impossible for the two milks to be alike. The main reason for the discrepancy was the unequal period between milkings, and it might be said that farmers should adapt their hours to suit the situation. He had had experience both in the production and distribution of milk, and he had found it absolutely impossible to keep the morning's and evening's milks approximately even. Consumers would have warm milk, and in order to meet this demand cows had to be milked very early in the afternoon for delivery a few hours later. In the case of cooled milk, often on farms it was not possible to alter the hours, or, at any rate, not sufficiently to equalise them. What was the position of the farmers? He thought that probably in Nottingham the law was administered in a sensible way, but he would point out that in many districts every one of these forty-four farmers was liable to be prosecuted, and might be convicted of having committed an offence under the Food and Drugs Act.

The Board of Agriculture had laid down certain figures, and if milk did not reach that standard the case was subject to inquiry. That was quite right. But from time to time there had been cases where magistrates had convicted when they knew that the milk, although below standard, had come straight from the cow. In Scotland, under a decision of the highest court there, the sale of milk as it came from the cow, although below the presumptive standard, was not an offence. He thought the time had come when an alteration should be made, and a movement had been started for the founding of a guarantee fund with the view of taking a case to the highest court in this country with the object of having it settled that it was not an offence to sell milk if it was absolutely as the cow gave it.

Many of the chief agricultural associations were contributing to that fund, which had been started in Cheshire, so that a decision might be taken in the highest court of this country. If he was in order, he would like to propose that the Society should guarantee 50*l.* to the fund now being raised.

Mr. W. A. MAY said that, for the purpose of having some further light thrown on this question, he would second the motion. As he understood it, it was only a promise to contribute an amount, or a portion of it, in the event of a test case being taken to the Court of Appeal. A large number of societies were guaranteeing sums towards the 1,000*l.* which the society in Cheshire were hopeful of being able to rely upon.

Mr. ADEANE pointed out that it was not merely a question of finance. If the Council thought it advisable the 50*l.* could easily be found. In his opinion, however, it was rather a question of principle, and, before they came to a decision, he thought it would be better to refer the matter to one of the Committees of the Council to be gone into very carefully.

After further discussion, in which Mr. MATHEWS, Sir HOWARD FRANK and Mr. DENT BROCKLEHURST took part, Mr. MIDDLETON withdrew his original motion, and in place of it moved that the question of the proposed grant to the Guarantee Fund be referred to the Dairy Committee.

Mr. MAY seconded the resolution, which was agreed to.

A statement with regard to the action of public analysts and of magistrates in connection with milk prosecutions was then made by Dr. Voelcker.

The Report of the Council to the Annual General Meeting of Governors and Members, to be held at the Royal Agricultural Hall, Islington, at 2.30 p.m., on Wednesday, December 8, was prepared and ordered to be issued.

Other business having been transacted, the Council adjourned until Wednesday, December 8, 1915.

WEDNESDAY, DECEMBER 8, 1915.

At a Monthly Council, held at 16 Bedford Square, London, W.C., the Duke of
PORTLAND, K.G. (President) in the Chair:—

Present:—Trustees.—Sir J. B. Bowen-Jones, Bart., the Earl of Coventry, Sir
Gilbert Greenall, Bart., C.V.O., Lord Middleton, Lord Moncton, the Earl of
Northbrook, the Hon. C. T. Parker, Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. C. R. W. Adeane, Mr. Percy Crutchley, Mr. J.
Marshall Dugdale, the Right Hon. Sir Ailwyn E. Fellows, K.C.V.O., Mr. Ernest
Mathews, the Earl of Yarborough.

Other Members of the Council.—Mr. D. T. Alexander, Mr. T. L. Aveling,
Capt. Clive Behrens, the Hon. J. R. de C. Boscawen, Mr. Davis Brown, Mr. T.
A. Buttar, Mr. Richardson Carr, Mr. W. W. Chapman, the Hon. J. E. Cross,
Mr. John Evens, Mr. J. F. Jeoner, Sir Howard Frank, Lord Harlech, Mr. J. H.
Hine, Mr. Arthur Hiscock, Mr. R. W. Hobbs, Mr. J. Howard Howard, Mr. W.
F. Ingram, Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. C. Middleton, Mr.
John Myatt, Mr. W. Nooton, Capt. R. Oliver-Bellasis, Mr. H. Overman, Mr. H.
G. Patterson, Mr. C. M. S. Pilkington, Lord Ranksborough, C.B., C.V.O., Mr.
F. Reynard, Mr. C. C. Rogers, Capt. Percy W. Seward, Mr. Fred Smith, Mr. A.
P. Turner, Mr. J. Bell White, and Mr. L. C. Wrigley.

Governors.—Mr. K. J. J. Mackenzie, Mr. F. Hamlyn Price, and Mr. Berille
Stanier, M.P.

The following Members of the Manchester Local Committee attended the
meeting of the General Manchester Committee on the previous afternoon: Mr.
Alex. Lawson, Alderman McCabe, and Mr. J. T. Smith.

The minutes of the last monthly meeting of the Council, held on November 3,
1915, were taken as read and approved.

Sir William Bennett, K.C.V.O., and Colonel B. T. L. Thomson (representing
the Lord Wandsworth Institution) were elected as Governors, and 15 duly
nominated candidates were admitted into the Society as Members.

The PRESIDENT said he was sure he would only be fulfilling the wishes of
the Council if he asked for their permission to write, on behalf of the Royal
Agricultural Society, a letter of sympathy to H.R.H. Prince Christian in his
serious illness. They all knew the services His Royal Highness had rendered
to the Society for many, many years, and it was with the greatest confidence
that he asked for their assent.

The Report of the Finance Committee was received and adopted, together
with the accounts of the Nottingham Show, as to which an explanatory statement
was made by Mr. ADEANE.

On the motion of Mr. ADEANE, seconded by Mr. CARR, it was resolved:—

"That authority be given for the sale of 96,500l. War Loan subscribed for, in order
to repay the loan from the Bank and (after ascertaining the actual net cost of the
conversion operation) for the sale of a sufficient part of the War Loan belonging to
Hills Bequest and the Insurance Fund respectively to refund the cost of conversion
of the Consols belonging to those two funds, and that the Finance Committee be
authorized to take all necessary steps to carry out the above sales."

Sir JOHN THOROLD formally moved:—

"That the name of the Duke of Richmond and Gordon be recommended to the
Annual General Meeting for election as President for the ensuing year. The Council
would, he was sure, be pleased to know that they would have at their head next
year one whose predecessors' names appeared so often on their Presidents' board."
Sir GILBERT GREENALL seconded the motion, which was unanimously
agreed to.

Mr. LUDDINGTON suggested that copies of the Society's leaflet on Milk
Adulteration which had been issued to Justices of the Peace should also be sent
to Medical Officers of Health.

Captain BEHRENS stated that in his part of Yorkshire farmers were
experiencing tremendous delay in obtaining the necessaries for their farms.
For the last three or four months it had been almost impossible for farmers to
get anything. He quite understood that they could not look for the same

regularity on the part of the railways as in ordinary times, but when they considered how enormously extended the delay was, he thought they would agree that as the Council of the Royal Agricultural Society they should bring the matter before the Board of Agriculture to induce them to use their efforts to lessen the delay. He gave instances—which were typical of many—of manures ordered eight weeks ago which were still undelivered. In one case it was only a matter of delivery from a town (Driffield) twenty miles off. This was due to the lack of trucks and waggons. For weeks past there had been a large number of trucks and waggons collected at York station, but he was told by the railway company that they could not be released because it might be necessary at any moment to hand them over to the military authorities. That was absolutely right, and he as a soldier quite realised the necessity. In the case of farmers who were very many miles from the station it entailed enormous cost. The telephone communication was very bad, and they had consequently to be continually sending to the station to see if their goods had arrived, and they were constantly disappointed. The matter was not confined to his part of Yorkshire. If something could be done to assist the farmers in this matter it would be of considerable advantage.

The Earl of NORTHBROOK pointed out that, at the request of the President of the Board of Agriculture, Agricultural War Committees had been appointed in the different counties who were to inquire and to report on certain grievances and difficulties of farmers, and the point raised by Captain Behrens was precisely one of the matters to be gone into by those Committees. He ventured to think that those bodies would be the proper channel of communication to the Board of Agriculture.

Delays in deliveries to farmers were also mentioned by several other Members of Council, and a discussion ensued, in which the following took part: Mr. MANSELL, Mr. BUTTAR, the Hon. GEORGE PARKER, Mr. LUDDINGTON, Mr. DAVIS BROWN, Mr. J. BELL WHITE, and Mr. FALCONER.

It was eventually resolved, on the motion of Lord MIDDLETON, seconded by the Earl of COVENTRY:—

“That representations be made to the Board of Agriculture respecting the difficulties incurred by agriculturists in the carriage of feeding stuffs, fertilisers and produce by rail, and requesting the Board to take the matter up as early as possible.”

The following Standing Committees were appointed for 1916:—Finance, Journal and Education, Chemical and Woburn, Botanical and Zoological, Veterinary, Stock Prizes, Implement, Showyard Works, Selection, Dairy and Produce, and Special. The present Members of the various Standing Committees were (with some exceptions) reappointed to those Committees. Mr. J. Bell White was added to the Journal and Education and Chemical and Woburn Committee; Mr. R. G. Carden to the Stock Prizes Committee, and the Duke of Portland, Mr. D. T. Alexander, and Mr. John Evens to the Committee of Selection.

Authority was given for the Seal of the Society to be affixed to a power of attorney for the sale of War Loan Stock.

The Council then adjourned until Wednesday, January 26, 1916.

Proceedings at the Annual General Meeting of Governors and Members,

HELD AT THE ROYAL AGRICULTURAL HALL, ISLINGTON.

WEDNESDAY, DECEMBER 8, 1915.

THE DUKE OF PORTLAND (PRESIDENT) IN THE CHAIR.

Present:—Trustees.—Sir J. B. Bowen-Jones, Bart., Sir Gilbert Greenall, Bart., C.V.O., Lord Middleton, the Earl of Northbrook, Sir John Threlkeld, Bart.

Vice-Presidents.—Mr. C. R. W. Adeane, Mr. Percy Crutchley, the Right Hon. Sir Ailwyn Fellowes, K.C.V.O., Mr. Ernest Mathews.

Ordinary Members of the Council.—Mr. T. L. Aveling, the Hon. J. R. de C. Boscawen, Mr. W. W. Chapman, the Hon. John E. Cross, Mr. John Evans, Mr. James Falconer, Mr. J. H. Fine, Mr. A. Hiscock, Mr. R. W. Hobbs, Mr. J. Howard Howard, Mr. J. L. Liddington, Mr. John Myatt, Mr. William Nocton, Mr. Henry Overman, Mr. R. G. Patterson, Mr. C. M. S. Pilkington, Mr. Frederick Reynard, Mr. C. W. Tindall, Mr. Arthur P. Turner.

Goveraork.—Mr. K. J. J. Mackenzie, Mr. F. Hamlyn Price, Mr. Beville Stanier, M.P.

Honorary Member.—Professor Sir John McFadyean.

Members.—The Hon. Alex. K. Parker, Sir Walter Gilbey, Bart., Sir Herbert Chermide, G.C.M.G., C.B., Messrs. J. A. Adams, John Almond, R. L. Angus, J. W. Arbutnot, H. F. Beales, John Beulah, A. O. T. Bennett, J. N. Bridges, Colin Campbell, W. S. Cleverley, J. F. Crewes, J. J. Crutlan, H. S. Daine, Walter Dunn, H. G. Few, A. Galbraith, C. T. Garland, W. Gaymer, W. Gibson, George Hobson, W. J. Hosken, Raymond King, W. Langridge, Henry Matthews, J. H. Mills, J. T. Mills, Rev. D. B. Montefiore, Messrs. C. Morris, W. Nixon, T. G. Owen, W. Pye, J. B. Roberts, J. A. Robinson, F. F. Rootham, St. John B. Roscoe, F. E. Savory, H. C. Slingsby, J. M. Strickland, J. Herbert Taylor, R. Templeton, G. D. Thody, Howard Thomas, E. Trimen, E. Van Brabant, Eldred G. F. Walker, W. H. Watson, G. B. Willans, Trevor Williams, &c., &c.

The PRESIDENT, in opening the proceedings, said he would like, at the outset, on behalf of the Society, to tender to the Agricultural Hall Company and the Smithfield Club the Society's best thanks for their courtesy in again allowing to the Royal Agricultural Society the use of that commodious room wherein to hold the annual meeting.

They were living in abnormal and unprosperated times, when all classes of the community were called upon to make great sacrifices—sacrifices that were being severely felt by the agricultural interest and industry, and particularly so in connection with the shortage of labour.

Of course, they all wished to support Lord Derby's Recruiting Scheme as strongly as possible, but he ventured to express the hope that care would be taken that no unnecessary injury should be inflicted upon the agriculturists of the country in consequence of any failure to recognise that an adequate supply of many of the staple articles of the food of the nation could not be maintained if the numbers of those engaged in their production were unduly depleted.

It was a matter for satisfaction that, despite the serious circumstances that had prevailed during the year, the Society had been able to carry on its usual activities, and the fact that this had been possible was due, not only to the energy and determination of the Council and Members of the Society, but also to the fact that in preceding years of prosperity the Society most wisely provided a reserve fund.

Accounts.

The first item on the agenda was the presentation of the balance-sheet, and, in accordance with custom, the Council formally submitted the balance-sheet for 1914, which, with the statement of receipts and expenditure, was published in the last volume of the Journal.

From the accounts—of which printed copies were in the hands of all present—it would be noticed that the Nottingham Show of this year resulted in a debit balance of 2,945*l.*, and, taking into consideration the contribution of 2,500*l.* from the ordinary account to the show account, this would leave an actual loss to the Society of 445*l.*

When they remembered the concentration of public attention upon the progress of the war, and when they remembered also the very unfavourable weather that prevailed on the first and second days of the Show, they were,

he thought, justified in concluding that the financial result of the Show was more satisfactory than most of them anticipated it would be.

In Wollaton Park they had had an ideal Show ground, and he was sure that they were all greatly indebted to Lord Middleton for so kindly allowing the Society to use it. (Hear, hear.)

Then they owed gratitude to the Mayor and Corporation of Nottingham, and to the local committee, who did their utmost to ensure perfection in the manifold details of the arrangements, and who gave the greatest assistance to the Society.

If it was not invidious to mention names he would particularly mention the then Mayor (Mr. Alderman Gregg), the Town Clerk (Mr. W. J. Board), and Mr. W. H. Bradwell (the Secretary of the Nottinghamshire Agricultural Society).

The two gentlemen last named were honorary secretaries of the local committee, and their labours had been both strenuous and successful.

He would also like to refer to the then Sheriff, now Mayor of Nottingham (Mr. John G. Small), who was instrumental in introducing a new feature into the programme of the annual Show. He alluded to the Dairy Farmers' Milk Competition. So far as the Royal Show was concerned, this was a new departure, and the result justified, and, indeed, exceeded, the anticipations of those who advocated the experiment.

And, of course, in connection with the Show they would be guilty of strange forgetfulness if they did not acknowledge the invaluable services of their honorary director, Sir Gilbert Greenall. (Applause.)

Membership.

Turning to the report of the Council, it would be seen that, for the first time in the last ten years, there was a considerable shrinkage in the membership.

The number of new subscribers who had joined the Society during the year was much below the normal, and the deaths—including those who have lost their lives in the service of the country—had been more numerous than usual.

Agricultural Relief of Allies Fund.

The report also gave particulars concerning the origin, constitution, and work of the Agricultural Relief of Allies Fund. As to the necessity of all possible agricultural assistance being given to those countries of our Allies, there could be no doubt, and the proposal that they should follow the precedent of 1870 had received widespread support.

His Majesty the King showed his sympathy by graciously giving 100*l.*; the Society gave 1,000*l.*, and the Committee were now able to report that contributions amounted to 30,000*l.*

In this connection he would like to thank the Smithfield Club for the great assistance they were giving the Fund by allowing the Jumble Sales to be held. At the same time he would like to draw public attention to the sales to be held on Thursday afternoon.

Show.

Twelve months ago it had been deemed desirable, in the interests of agriculture and of the nation, that the Royal Show should be held this year, and similar reasons had been the determining factors in the decision to proceed with the Show next year. A meeting had been convened at Manchester to consider the advisability of holding the Show in that city. The representatives of the Society who attended as a deputation were very kindly received, and from the tone of the meeting he anticipated that warm support would be given to the Show. He therefore felt confident that, all being well, and the war taking a satisfactory course, the Show at Manchester would at least be as good as the Show held at Nottingham during the past summer. (Applause.)

Adoption of Report.

Sir HERBERT CHERMSIDE said they had just heard from the President of the year a most interesting speech. He had been asked to move the adoption of the Report, which most of them had read, and the President had dealt with the salient points it contained. He thought they might congratulate themselves sincerely on the success of the Nottingham Show. Ever since the removal from a permanent station the Society's affairs had prospered as regards the Shows. (Hear, hear.) He thought they must all feel that they had in the personnel of their directorship and in their organisation a very fine one, but he was now going, following on the remarks made by the President, to dwell for a few moments on the reverse side of the medal. Ever since he had had the honour of belonging to the Society he had felt the conviction that it was not as popular, and had not been popularised, as it ought to be. The Royal Agricultural Society had a membership of 10,000. What was it? Why, one of the far younger societies to which he belonged, in three or four years, had outstripped that membership two or three times over. He thought that anyone who read the reports must feel that, in spite of the activities of the Society, it was only a small scale organisation for a country in which agriculture was so important as it was in our own, and in which agriculture and stockbreeding had led the world. If that was the feeling of the Members of the Society, it was for them to invite the Council to consider—as doubtless they had considered over and over again—whether new methods could not be introduced to popularise it. Personally his own suggestion would be—first of all, special terms for agriculturists. A Society to which he had the honour to belong—the Royal Arboricultural Society of Scotland—had perfectly separate terms for those in minor positions—those employed, wage-earners, and others.

Going back to the Charter of 1840 and the Supplemental Charter of 1905, their Society was, in a measure, plutocratically organised. That was, perhaps, a small point. Of course, it was very different in the case of financial companies, where the directors must have a certain status in proportion to the responsibilities they exercised. In the case of the Society there was nothing of the sort. Times changed, and he could hardly see the force of the rule that Trustees and Vice-Presidents should only be selected from the list of Governors.

He would like to ask the Council if the principle of decentralisation could not be introduced, so that in the groups, or if possible, in the counties, there might be local branches of the Society, which could conduct local competitions in cultivation, stock raising, economical feeding, and various other branches which the Society supported. Personally, from what he had seen of the small societies in their great Dependencies, he thought that the Society might be placed more or less in relation to local societies as the Jockey Club was to the local race meetings. He would, in conclusion, before asking them to adopt the Report, call their attention to the very critical position in which they stood as regards war time and increased production. He was afraid he had not followed very closely the recommendations of the various committees and the measures advocated by the Minister of Agriculture, but, as far as he had, he had been struck by the point that increased production seemed to be suggested by putting more land under the plough or taking more frequent white crops—crops of cereals. This question of actual future production was one of the most important with which they as a nation and as farmers could stand face to face. During the last ten years he had made a series of agricultural tours in Europe—in Germany, Switzerland, Holland, Scandinavia, Denmark, and so on. In 1914, about a month before the war, he had been through Central Germany. It was nine years since he had made a similar tour in Germany. When he was there in 1905 he thought that this country had very little to learn from Germany, but when he was there last year he came to the conclusion that we had a great deal to learn from that country. Their Society carried out at Woburn some admirable experiments, and whenever possible, he attended the Members' visits. He did feel that they wanted

to get some of the same system which was now raising production on the Continent by leaps and bounds. He had felt very much the need for greater influence to be developed by their Society, so admirable in constitution and its activities as far as they went. He begged to move the adoption of the Report.

Mr. J. HERBERT TAYLOR (Sussex) seconded the resolution, and in doing so, said he would only emphasise the matter of the reduction in the membership, but when they returned to normal conditions he hoped that their number would increase.

Mr. ELDRED G. F. WALKER (Bristol) at the request of several Members in Somerset, Gloucester and Wiltshire, took exception to the paragraph in the Report, which stated that:—

The usual steps have been taken by the Board of Agriculture and Fisheries to stamp out the disease (*foot-and-mouth*), but it is understood that exceptional difficulties arose at the outset, owing to the fact that the disease appeared to have been in existence for at least a fortnight before it was reported.

On behalf of those Members he would ask the Council of the Royal Agricultural Society to withdraw the statement quoted. The Board of Agriculture had grossly mismanaged matters in dealing with this outbreak, and for the Society to gloss it over, as was done in the Report, was very bad indeed. When it was first reported, the Board's inspectors had not been able to diagnose the disease as foot-and-mouth, and it was only a fortnight later that it had been so diagnosed. Meanwhile the animal had been slaughtered and some of the meat had been sent to London for consumption. Farmers were now suffering in consequence of the restrictions which had been imposed owing to the spread of the disease. He moved that the paragraph in question be deleted.

Mr. HENRY MATTHEWS (Winterbourne) seconded.

Sir JOHN MCFADYEAN said it was true that a charge had been made that a farmer diagnosed a case of foot-and-mouth disease, and that the diagnosis was not confirmed on the first inspection of veterinary officials of the Board of Agriculture, but that the diagnosis of the farmer was subsequently confirmed by the Board after a delay of a fortnight. He had a little information with regard to this case, and he believed that the statement made was not accurate. He must content himself, however, by saying that they had heard only one side of the case, but that, he took it, was not a point covered by the paragraph. All the Council intended to convey was that the Board of Agriculture had dealt with the outbreak by the usual methods of isolation and slaughter, and he believed that to be a fact. He maintained that the paragraph as printed was substantially correct.

Mr. WALKER said he was content, after Sir John's explanation, to withdraw his motion and to let it go forth that the Board of Agriculture had pursued "its usual course." (Loud laughter.)

Election of President.

Mr. BEVILLE STANIER, M.P., moved that His Grace the Duke of Richmond and Gordon, K.G., be elected President of the Society, to hold office until the next ensuing annual general meeting. He did not think that agriculturists wanted anything said about the great Dukes of Richmond and Gordon. At the present moment his Grace was one of their Vice-Presidents, and on four occasions the names of his predecessors appeared on the illustrious role of Presidents of the Society. Irrespective of that, they had always been in the forefront with their flocks and herds and racing establishments. If his Grace had the interests of flocks, herds, and horses, he was sure that he must embrace everything that was dear to the hearts of agriculturists.

Mr. COLIN CAMPBELL (Newark) in seconding the motion, ventured to express the hope that his Grace the Duke of Richmond and Gordon might be as successful in his year of office as the Duke of Portland had been. He also ventured to express the hope that when the Show took place next year it

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would be held under better auspices and in happier times than the Show over which their present Chairman had presided.

The resolution was carried unanimously.

The PRESIDENT then read the following letter from the Duke of Richmond and Gordon :—

In the event of my being elected President of the Royal for next year, if you think it necessary to apologise for my absence from the meeting, will you express my gratitude for the honour done me, and say that work in connection with Lord Derby's recruiting scheme in two counties, in each of which I am chairman of the Joint Committee, makes it impossible for me to be in London next week?

Election of Auditors.

Mr. H. S. DAINE (Warrington) said he had very great pleasure in proposing that the best thanks of the Society be tendered to Messrs. Jonas M. Webb, Hubert J. Greenwood, and Newell P. Squarey for their services as Auditors, and that they be re-elected for the ensuing year. The duties of these gentlemen were onerous and arduous, and they thoroughly well deserved the thanks of the meeting. Might they have more work in the future, and might the balance-sheet be more favourable from year to year.

Mr. ALGERNON MOREING formally seconded the motion, which was agreed to.

Election of Trustees.

The PRESIDENT announced that the following twelve Trustees had been nominated by the Council in accordance with the by-laws :—

H.R.H. Prince Christian, K.G., Cumberland Lodge, Windsor.
Duke of Bedford, K.G., Woburn Abbey, Bedfordshire.
Sir J. B. Bowen Jones, Bart., Council House Court, Shrewsbury.
Col. F. S. W. Cornwallis, Linton Park, Maidstone, Kent.
Earl of Coventry, Croome Court, Severn Stoke, Worcestershire.
Duke of Devonshire, G.C.V.O., Chatsworth, Chesterfield.
Sir Gilbert Gresham, Bart., C.V.O., Wotton Hall, Warrington.
Lord Middleton, Birasall House, Malton, Yorks.
Lord Moreton, Barsden House, Chipping Norton, Oxon.
Earl of Northbrook, Stratton, Micheldever, Hampshire.
Hon. Cecil T. Parker, The Grove, Corsham, Wiltshire.
Sir John H. Thorold, Bart., Old Hall, Syston, Grantham.

On a show of hands they were declared to be re-elected as Trustees to hold office until the next ensuing annual general meeting.

Election of Vice-Presidents.

The Vice-Presidents were re-elected in a similar manner, their names being as under :—

C. R. W. Adeane, Babraham Hall, Cambridge.
Percy Crutchley, Sunninghill Lodge, Ascot, Berkshire.
Earl of Derby, G.C.V.O., C.B., Knowsley, Prescott, Lancashire.
J. Marshall Dugdale, Liwryn, Llanfyllin, S.O., Mont.
Right Hon. Sir Ailwyn E. Fellowes, K.C.V.O., Honingham, Norwich.
R. M. Greaves, Wern, Fortmadoc, North Wales.
Ernest Mathews, Little Shardeloes, Amersham, Bucks.
Duke of Northumberland, K.G., Alnwick Castle, Northumberland.
Duke of Portland, K.G., Welbeck Abbey, Worksop, Notts.
Earl of Powis, Powis Castle, Welshpool, Mont.
Duke of Richmond and Gordon, K.G., Goodwood, Chichester.
Earl of Yarborough, Brocklesby Park, Lincolnshire.

Election to the Council.

The PRESIDENT then reported, in accordance with By-law 87, the names of the following Ordinary Members of Council who had been elected to represent the several Divisions of the Society included in Group "C," in order that the meeting might "take cognisance of their election" :—

Cumberland : Joseph Harris, Brackenbrough Tower, Carlisle.
Westmoreland : G. W. Wilson, Rigmaden Park, Kirkby Lonsdale.

Yorks (East Riding): Frederick Reynard, Sunderlandwick, Driffield.
 North Wales: Arthur E. Evans, Bronwylla, Wrexham.
 Lincoln: John Evans, Burton, near Lincoln, and C. W. Tindall, Wainfleet.
 Huntingdon: John Kowell, Bury, Huntingdon.
 Cambridge: J. L. Luddington, Littleport, Ely.
 Oxford: Robert W. Hobbs, Kelmscott, Lechlade.
 Kent: Thomas L. Aveling, Boley Hill House, Rochester, and B. Fitzmaurice, Plumpton, Goodnestone, Canterbury.
 Warwick: Capt. R. Oliver-Bellasis, Shilton House, Coventry.
 Gloucester: H. Dent Brocklehurst, Sudeley Castle, Winchcombe, and W. T. Garne, Aldsworth, Northleach.
 Glamorgan: D. T. Alexander, Brynethen, Dinas Powis.
 Somerset: Lord Strachie, Sutton Court, Pensford.
 Berkshire: Lt.-Col. H. G. Henderson, M.P., Kitemore, Faringdon.
 Sussex: Walter F. Ingram, 2 St. Andrew's Place, Lewes.
 Ireland: Richard George Carden, Fishmoynce, Templemore, co. Tipperary.

Suggestions of Members.

The PRESIDENT then enquired if any Governor or Member had any remarks to make or suggestions to offer for the consideration of the Council.

Mr. KENNETH J. J. MACKENZIE (Cambridge) said that though he had had the privilege as a Governor of the Society to listen to the most earnest deliberations of the Council that morning about the matter of facilities for farm produce on the railway, he ventured to take the opportunity of again drawing attention to the matter. The School of Agriculture at Cambridge had been entrusted by the Board of Agriculture with the responsibility of giving advice to the agriculturists of England about feeding stuffs. No question of detail gave them more anxiety than the matter of railway transit. The Board of Agriculture, as everybody knew, were doing their best, and the various committees in the country were also doing their best, but he believed it was necessary for the Council of the Society to take special steps to warn the British public that if they wanted farmers to help them to make bullets to win the war by keeping down foreign exchange, they must give farmers reasonable facilities for moving their produce, and obtaining those things which they required to work their land.

Thanks to Retiring President.

Mr. F. HAMLYN PRICE (London) rose to ask the meeting to accord a hearty vote of thanks to His Grace the Duke of Portland for his services as President during the past year. (Applause.) It was quite plain to him from the way in which the meeting had received the resolution that it needed no words of his to commend it. He ventured to say that they had had very many of the best of Presidents in the past, but he felt sure that they had never had a better one than His Grace. (Hear, hear.) He did not think that he need amplify his expressions in His Grace's presence, though if he were asked to describe him he would say that he was an admirable administrator with a peculiar charm of manner. One felt led on on an occasion like that, but he had such an affection for the Royal and all its work. If he could have his way in politics he would have the Duke of Portland for Prime Minister, Sir Gilbert Greenall as Home Secretary, and Mr. McRow as Under-Secretary for all Departments. (Laughter and applause.)

Mr. J. J. CRIDLAN (Gloucester), in seconding the motion, said it was his great fortune to have a charming wife who came from Nottingham, and a half of what she had told him of the kindness of His Grace and his charming spouse were true, there was no wonder they were beloved. He was sure that when he got home that evening and told his wife that His Grace had won the championship in the Carcase Competition—and especially with an Aberdeen Angus heifer—he would have a greater smile than ever. He had, with Lord Northbrook, also had the privilege of serving on the Committee of the Allotment Fund, in which His Grace had taken so great an interest, and he could bear testimony to the good work done there by him, and he might add that His

Grace had given the animal that had taken the championship—and, he thought, another, but was not quite sure about that—to be sold for that fund to-morrow. The resolution was carried by acclamation.

The DUKE OF PORTLAND, whose rising was greeted with applause, said he wished most sincerely to express his grateful appreciation of the kind words used by the mover and seconder of the vote of thanks to him for his services during the past year, and he thanked them all for the cordial reception given to the proposition. He had deemed it a great honour to occupy the Presidential chair, and he would look back upon the year's work with very great satisfaction; indeed, if it had not been for the anxiety arising from the war he should look back upon the year with unalloyed pleasure. As it was, he could truly say that the work had been very congenial, and he had never been engaged in work of a public character when he had found more of the spirit of energetic and ready co-operation, than in the colleagues with whom he had been associated. He would also like to say how much he owed to Mr. McRow and his staff for their willing, loyal, and unremitting services, which have been quite indispensable. To one and all who had helped him he tendered his best thanks, and if at any future time he could do anything to promote the welfare and further the interests of the Society he would have the greatest possible pleasure in so doing.

NOTTINGHAM SHOW,

JUNE 29 TO JULY 3, 1915.

Officials of the Show.

PRESIDENT:

THE DUKE OF PORTLAND, K.G.

Honorary Director.

Sir GILBERT GREENALL, Bart., C.V.O., Walton Hall, Warrington.

Stewards of Live Stock.

Horses.

CYRIL E. GREENALL, The Manor, Carlton Scroop, Grantham.
JOHN ROWELL, Bury, Huntingdon.

Cattle.

JOSEPH HARRIS, Brackenburgh Tower, Carlisle.

Sheep and Pigs.

C. W. TINDALL, Wainfleet, S.O., Lincolnshire.

Steward of Dairy, Poultry and Produce.

ERNEST MATHEWS, Little Shardeloes, Amersham, Bucks.

Steward of Veterinary Examination.

CYRIL E. GREENALL, The Manor, Carlton Scroop, Grantham.

Steward of Forage.

CLAUDE M. S. PILKINGTON, Wollaton, Nottingham.

Stewards of Implements.

F. S. W. CORNWALLIS, Linton Park, Maidstone.

The Hon. J. E. CROSS, High Legh, Knutsford.

R. M. GREAVES, Weir, Portmadoc.

Stewards of Refreshments.

PERCY CRUTCHLEY, Sunninghill Lodge, Ascot.

WILLIAM HARRISON, Albion Ironworks, Leigh, Lancashire.

Stewards of Horticultural Exhibition.

The Hon. JOHN R. DE C. BOSCAWEN, Tregye, Perranweil, Cornwall.

A. A. PATON, Oneida, Sefton Park, Liverpool.

Steward of Gates, Fencing, Timber, &c.

C. COLTMAN ROGERS, Stanage Park, Brampton Brian.

Stewards of Finance.

CHARLES R. W. ADEANE, Babraham Hall, Cambridge.

THOMAS L. AVELING, Boley Hill House, Rochester.

RICHARDSON CARR, Estate Office, Tring Park, Herts.

Surveyor.

J. R. NAYLOR, F.R.I.B.A., Caudon Chambers, Long Row, Nottingham.

Secretary.

THOMAS McROW, 16 Bedford Square, London, W.C.

JUDGES OF IMPLEMENTS.

Miscellaneous Implements entered for Silver Medals.

W. H. CARTER, Moss Hall, Carrington, Manchester.
J. BROUGHTON DUGDALE, Wroxall Abbey, Warwick.

JUDGES OF LIVE STOCK, &c.

HORSES.

Shires.—Classes 1-11.

JOHN BLUNDELL, Lower Burrow, Scotforth, Lancaster.
R. H. KEENE, Westfield, Medmenham, Marlow.

Clydesdales.—Classes 12-20.

J. E. KERR, Harviestoun, Dollar.
JAMES PICKEN, Torts Farm, Kirkcudbright.

Suffolks.—Classes 21-28.

PHIL BROWNE, Hall Farm, Rushbrooke, Bury St. Edmunds.
HENRY OVERMAN, Kipton House, Weasenham, Swaffham.

Hunters.—Classes 29-40: Polo Ponies.

—Classes 41-45; and Riding.—Classes 63-69.

SIR H. F. DE TRAFFORD, Bart., Hill Crest, Market Harborough.

T. L. WICKHAM-BOYNTON, Burton Acre Hall, Driffield.

Cleveland Bays and Coach Horses.—Classes 46 and 47.

ANDREW MOSCROP, Thorganby Hall, West Cottingham, York.

Hackneys.—Classes 48-54; and Hackney Ponies.—Classes 55 and 56.

F. W. BUTLER, Kirkburn Manor, Driffield.

C. EDWARD E. COOKE, Manor House, Bygrave, Baldock, Herts.

Shetland Ponies.—Classes 57 and 58.

WILLIAM BEATTIE, Hardwick Grange, Clumber Park, Worksop.

Welsh Ponies.—Classes 59-62.

T. H. VAUGHAN, Llyssan, Llanelwyl, Welshpool.

Pit Ponies.—Classes 70 and 71.

WILLIAM BEATTIE, Hardwick Grange, Clumber Park, Worksop.

Harness Horses.—Classes A to G.

NIGEL C. COLMAN, Nork Park, Epsom Downs.

A. W. HICKLING, Adbolton, Nottingham.

CATTLE.

Shorthorns.—Classes 72-84.

JOHN L. REID, Cronkleybank, Ellon, N.B.

J. DEANE WILLIS, Bapton Manor, Cofford St. Mary, Wilts.

WILLIAM WRIGHT, St. John's House, Bracebridge Heath, Lincoln.

Dairy Shorthorns.—Classes 85-89.

WALTER CROSSLAND, Estate Office, Buscot Park, Farington.

J. C. ROBINSON, Uford, Lewes.

Lincolnshire Red Shorthorns.—

Classes 91-98.

BENJAMIN ROWLAND, Ivy House, Wainfleet, Lincs.

JOHN SEARBY, Croft, Wainfleet, Lincs.

Herefords.—Classes 100-107.

WILLIAM SMITH, Blinney, Dilwyn, S.O., Herefordshire.

A. P. TURNER, Fayre Oakes, Hereford.

Devons.—Classes 108-113.

C. L. HANCOCK, The Manor House, Cothelstone, Bishops Cleeve, Leics.

South Devons.—Classes 115-118.

WILLIAM PAIGE, Treboul, St. Germans, Cornwall.

Longhorns.—Classes 120-123.

EDWARD TINGHY, Dersingham, Kings Lynn.

Sussex.—Classes 125-129.

HENRY RIGDEN, Ashford, Kent.

Welsh.—Classes 130-133.

DAVID JENKINS, Corrigtranau, Talybont, Cardiganshire.

Red Polls.—Classes 134-139.

J. B. DIMMOCK, Shotford Hall, Harleston.

W. R. HUSTLER, Earls Hall, Cockfield, S.O., Suffolk.

Aberdeen-Angus.—Classes 141-146.

JOHN MACPHERSON, Mulben Mains, Mulben, N.B.

WILLIAM WILSON, Coynachie, Gartly, N.B.

List of Judges at Nottingham, 1915.

Galloways.—*Classes 147-151.*

WM. McCONCHIE, Mains of Penninghame, Newton Stewart.

Ayrshires.—*Classes 152 and 153.*

W. P. GILMOUR, Balmongan, Kirkcudbright.

Holstein-Friesians.—*Classes 155-160.*

JOHN BROWN, Hedges Farm, St. Albans.

Jerseys.—*Classes 162-169.*

HERBERT PADWICK, The Manor House, West Thorney, Emsworth.

HON. ALEX. E. PARKER, Norton Curlien, Warwick.

Guernseys.—*Classes 171-177.*

G. TITUS BARHAM, Sudbury Park, Middlesex.

Kerrys.—*Classes 179-181 : and*

Dexters.—*Classes 183-185.*

H. D. BETTERIDGE, Drayton, Woodstock Road, Oxford.

ERNEST P. PEYTON, Woodcote Lodge, Kenilworth.

Milk Yield Prizes and Butter Tests.

Awards made on Certificate of the STEWARD OF DAIRYING.

SHEEP.

Oxford Downs.—*Classes 188-192.*

WILLIAM HITCH, Estate Office, Cowley Manor, Cheltenham.

W. A. TREWERKE, The Mount, Churchill, Chipping Norton.

Shropshires.—*Classes 193-198.*

FRANK WEBB, Shenstone, Lichfield.

M. WILLIAMS, Whiston Hall, Albrington, Wolverhampton.

Southdowns.—*Classes 199-204.*

D. D. CRAWFORD, Nonington, Dover.

WALTER LANGHEAD, Clymping House, Little Hampton.

Hampshire Downs.—*Classes 205-210.*

E. J. BENNETT, Chilmark, Salisbury.

JOHN PAIS, Borongh, Micheldever, Hants.

Suffolks.—*Classes 211-216.*

JOHN R. KEEBLE, Brantbam Hall, Manningtree, Essex.

Dorset Downs.—*Classes 217-219.*

W. W. LOVEFACE, Piddlehinton, Dorchester.

Dorset Horns.—*Classes 220-223.*

SAMUEL KIDNER, Bickley, Milverton, Somerset.

Eyelands.—*Classes 224-228.*

G. DUCK, South Dean, Petworth.

Kerry Hill (Wales).—

Classes 229-231.

THOMAS JONES, Great Weston, Montgomery.

Lincolns.—*Classes 232-238.*

R. DIXON, Dunnington Manor, Scorton, Hull.

G. MAREIS, Kirmington, Brocklesby, Lincs.

Leicesters.—*Classes 239-242.*

THOMAS PARKER, Dawnay Lodge, Ganton, Scarborough.

Border Leicesters.—*Classes 243-245.*

JAMES JEFFREY, Deuchrie, Prestonkirk.

JAMES WALLACE, Chapelhill, Kirkcudbright.

Wensleydales.—*Classes 246-249.*

WILLIAM MILNER, Slyne Hall, Lancaster.

Lonks.—*Classes 250 and 251 ; and*

Derbyshire Gritstones.—*Classes 252 and 253.*

THOMAS WHITTAM, Hall Cottage, Hurstwood, near Burnley.

Kent or Romney Marsh.—

Classes 254-259.

F. AUSTEN BENSTED, The Lawn, Sittingbourne.

T. VICKERS, Waltham, Canterbury.

Cotswolds.—*Classes 260-263.*

DAVIS BROWN, Marham Hall, Townham Market.

Devon Long Wools.—

Classes 264 and 265.

C. L. HANCOCK, The Manor House, Cotelstone, Bishops Lydeard.

South Devons.—*Classes 266-270.*

WILLIAM PAIGE, Treboul, St. Germans, Cornwall.

Dartmoors.—*Classes 271-273.*

H. MIDLAND, Woodmanswell, Brevort, Tavistock.

Exmoor Horn.—*Classes 274-276.*

W. G. THORNE, Higher House, Twicken, South Molton.

Cheviots.—*Classes 277-279.*

ANDREW DOUGLAS, Saughtree, Newcastleton.

Herdicks.—*Classes* 280-282; and
Black-faced Mountain.—*Classes* 285
and 286.

EDWARD NELSON, Gatesgarth, Butter-
mere, Cockermouth.

Welsh Mountain.—*Classes* 283 and 284.

T. H. VAUGHAN, Llyssun, Llanerfyl,
Welshpool.

PIGS.

Large Whites.—*Classes* 287-294.

R. J. PURVIS, The Rookery, Wyboston,
St. Neots, Hunts.

Middle Whites.—*Classes* 295-300.

GEORGE SINCLAIR, Home Farm,
Dalmeny Park, Edinburgh.

Tamworths.—*Classes* 301-306.

JAMES G. KERR, Estate Office,
Chidderton, Salisbury.

Berkshires.—*Classes* 307-312.

T. A. EDNEY HAYTER, The Mount,
Whitchurch, Hants.

Large Blacks.—*Classes* 313-318.

JOHN WARNE, Treveglies, St. Mabyn,
S.O., Cornwall.

Lincolnshire Curly-coated.—

Classes 319-324.

GEORGE FREIR, Toilethorpe House,
Deeping St. Nicholas, Spalding.

POULTRY.

Classes 325-476.

W. W. BROOMHEAD, 6 Jessica Road,
Wandsworth Common, S.W.

T. C. BYRNE, Hawthorn Lodge, Wyke
Green, Birmingham.

W. M. ELKINGTON, Ladye's Hill,
Kenilworth.

JOHN MEIKLE, Camregan, Girvan,
Ayrshire.

W. H. SILVESTER, Hawthorns, Hills-
borough Park, Sheffield.

C. SNEEDON, Kirkham, Lancashire.

T. C. SOLOMON, Struther, Dunlop, N.B.

CLEM WATSON, Oxhey, Watford.

PRODUCE.

Butter.—*Classes* 477-482.

Professor R. J. DRUMMOND, Dairy
School, Kilmarnock.

Cheese.—*Classes* 483-491

Professor R. J. DRUMMOND, Dairy
School, Kilmarnock.

GEORGE PLATT, Eaton, Tarporley.

Bacon and Hams.—*Classes* 492-500.

MORTIMER E. WEBB, 124, King's
Road, Sloane Square, London, S.W.

Cider and Perry.—*Classes* 501-508.

ELDRED G. F. WALKER, The Hollies,
Chew Stoke, Bristol.

JOHN H. WOOTTON, Byford, Hereford.

Bottled Fruits.—*Classes* 509-513.

J. SPIRES, Army and Navy Co-oper-
ative Society, Ltd., 105 Victoria
Street, Westminster, S.W.

Wool.—*Classes* 514-533.

JAMES T. HADDON, 19 Dale Street,
Bradford.

W. A. SMITH, Murivance, Shrewsbury.

Hives and Honey.—*Classes* 534-563.

T. W. COWAN, Upcott House, Taunton.
W. HERROD-HEMPHALL, Old Bedford
Road, Luton, Beds.

FARMS.

Classes 1-6.

THOMAS A. CROOK, Cnesham House,
Kirkham, Lancs.

JOHN RIMMER, Roby Farm, Roby,
Liverpool.

HORTICULTURE.

N. F. BARNES, Eaton Gardens, Chester.
A. MACKELLAR, V.M.H., Royal Gar-
dens, Windsor.

T. STEVENSON, Woburn Place Gardens,
Addlestone, Surrey.

JAMES VERT, Chirk Castle Gardens,
Whitehurst, Raabon, N. Wales.

GATES, FENCING, TIMBER, &c.

T. WHITAKER, Newton Harcourt,
Leicester.

CHIEF VETERINARY OFFICER.

JOHN MALCOLM, F.R.C.V.S., Holiday
Street Wharf, Birmingham.

ASSISTANT VETERINARY OFFICER.

WILLIAM TRIGGER, F.R.C.V.S.,
Newcastle, Staffs.

VETERINARY INSPECTORS.

Professor J. MACQUEEN, F.R.C.V.S.,
Royal Veterinary College, Camden
Town, London, N.W.

FRANK H. GIBBINGS, F.R.C.V.S., The
Black Boy Yard, Nottingham.

F. L. GOOCH, F.R.C.V.S., St. Martin's,
Stamford.

CHARLES HAYWOOD, M.R.C.V.S.,
Millstone, Leicester.

AWARDS OF PRIZES AT NOTTINGHAM, 1915.

ABBREVIATIONS.

- I., First Prize. II., Second Prize. III., Third Prize. IV., Fourth Prize.
V., Fifth Prize. R. N., Reserve Number. H. C., Highly Commended.
C., Commended.

N.B.—The responsibility for the accuracy of the description or pedigree, and for the eligibility to compete of the animals entered in the following classes, rests solely with the Exhibitors.

Unless otherwise stated, each Prize Animal in the Classes for Horses, Cattle, Sheep, and Pigs, was "bred by Exhibitor."

HORSES.

Shires.

Class 1.—Shire Stallions, foaled in 1914.

[10 entries.]

No. in
Cats-
logue.

- 3 I. (415.)—A. H. CLARK, Moulton Eaugate, Spalding, for Moulton Future King, bay, s. Moulton Victor King 28500, d. Moulton Pansy 54740 by Lockinge Harold 16750.
- 4 II. (410.)—F. FARNSWORTH & SONS, Kineton, Warwick, for Ratchife Revier, brown, bred by J. H. Warr, Harwood House, Tachbrook, Leamington; s. Ratchife Premier 29775, d. Blossom by Exton Conqueror 18725.
- 9 III. (25.)—ROBERT L. MOND, Combe Bank, Sundridge, near Sevenoaks, for Sundridge Crown Royal, bay, bred by the Duke of Westminster, Eaton Hall, Chester; s. Eaton Nunsuch 27301, d. Naseby Rambler 1176 by Birdsall Mebestrel.
- 5 IV. (43.)—SIR WALPOLE GREENWELL, BT., Marden Park, Woldingham, Surrey, for Marden Peter, bay; s. Marden Forest King 28334, d. Eureka 53835 by Hereford 1883.
- 10 R. N. & H. C.—W. & H. WHITLEY, Primley Farm, Paignton, for Primley Gladiator, C.—6.

Class 2.—Shire Stallions, foaled in 1913. [11 entries.]

- 20 I. (415, & Champion.)—JOHN ROWELL, Bury, Huntingdon, for Bury King's Champion 32190, bay, bred by G. H. Edwards, Wadley Farm, Blagdon, Bristol; s. King Col 111 26351, d. Rickford Forest Queen 58138 by Delford Spark 4315.
- 15 II. (410.)—COLIN MACIVERR, Blaisdon Hall, Longhope, Glos., for Blaisdon Draughtsman 32113, bay; s. Warton Draughtsman 27805, d. Blaisdon Princess 53080 by Montford Jupiter 18940.
- 13 III. (45.)—DENBY COLLINS, The Shire Stud, Bramhope, Leeds, for Primley Freeman 32735, bay, bred by D. R. Lloyd, Dinian Valley, Anglesea; s. Tatton Dray King 2577, d. Lolworth Queen 51575 by Hendre Duke 16178.
- 11 IV. (43.)—HIS MAJESTY THE KING, Sandringham, for Blackmoor 32111, black; s. Challenge Combination 21251, d. Early Primrose 63543 by Hoe Forest King 24521.
- 16 R. N. & H. C.—LORD MIDDLETON, Birdsall, Malton, for Chatsworth Craftsman, H. C.—18, 19.

Class 3.—Shire Stallions, foaled in 1912. [7 entries.]

- 28 I. (415, & R. N. for Champion.)—F. E. MUNTZ, Umberslade, Hockley Heath, for King's Warrior 31503, bay, bred by Thomas Jones, Quarry Farm, Godstone; s. King of Tandrige 44351, d. Marden Fan 2nd 57679 by Tatton Prior 21953.
- 23 II. (410.)—DENBY COLLINS, The Shire Stud, Bramhope, Leeds, for Lincoln Dray King 31-90, bay, bred by T. S. Herrick, Kilmington, Notts; s. Tatton Dray King 2577, d. May Queen 64344 by Mere Duke 18235.

¹ Prizes given by the Shire Horse Society.

² Champion Gold Medal given by the Shire Horse Society for the best Stallion in Classes 1-3.

Award of Live Stock Prizes at Nottingham, 1915. iii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 24 III. (£5.)—A. GRANDAGE, LTD., Bramhope Stud, Monks Heath, Chelford, Cheshire, for **Bramhope Monogram** 31232, bay, bred by S. Crawley, Hemington, Oundle; s. Gaer Conqueror 25218, d. Hemington Woodbine 64121 by Ercall Wynn 14929.
- 25 R. N. & H. C.—R. N. SUTTON-NELTHORPE, Seawby Hall, Brigg, for **Contrast**.
H. C.—22.

Class 4.—Shire Fillies, foaled in 1914. [17 entries.]

- 29 I. (£15.)—J. B. APPLEBY, Home Farm, Groby, Leicester, for **Bradgate Pearl**, bay; s. Bradgate Majestic 29139, d. Lockinge Garnet 42553 by Buscot Sena or 17816.
- 45 II. (£10.)—J. G. WILLIAMS, Pendley Manor, Tring, for **Pendley Royal Princess**, bay; s. Norbury Menestrel 23543, d. Bardon Forest Princess 55568 by Lockinge Forest King.
- 39 III. (£5.)—ROBERT L. MOND, Combe Bank, Sundridge, near Sevenoaks, for **Farewell Tolworth**, bay, bred by the Exors. of Richard Thirby, Tolworth Park, Surbiton; s. King of Tandridge 93351, d. Swan Leader 68325 by Hatchio Ringleader 1787.
- 37 IV. (£25.)—SIR WALPOLE GREENWELL, RT., Marden Park, Wottonham, Surrey, for **Marden Adela**, bay; s. Marden Forest King 28334, d. Marden Queen 45634 by Dunsmore Jameson 17972.
- 43 R. N. & H. C.—W. & H. WHITLEY, Primley Farm, Paignton, for **Primley Gladys**.
H. C.—30, 31, 36.

Class 5.—Shire Fillies, foaled in 1913. [10 entries.]

- 47 I. (£15.)—THE EDGCOTE SHORTHORN CO. LTD., Edgcote, Banbury, for **Fine Feathers** 77957, bay, bred by the late Lord Rothschild, Tring Park, Herts; s. Babington Nuth Secundus 26263, d. Lilleshall Countess 55540 by Dunsmore Jameson.
- 50 II. (£10.)—ROBERT L. MOND, Combe Bank, Sundridge, near Sevenoaks, for **Enderby Fashion** 77857, bay, bred by E. A. Kirk, Mavis Enderby, Spilsby; s. King of Tandridge 24261, d. Enderby Combine 66893 by Cattlegate Combination 21254.
- 49 III. (£5.)—F. W. GRIFFIN, Boro' Fen, Peterborough, for **Boro' Forest Queen** 3rd 77114, bay; s. Bridge Solars Jupiter 27127, d. Boro' Forest Queen 6319, by Lockinge Forest King 18867.
- 51 R. N. & H. C.—W. & H. WHITLEY, Primley Farm, Paignton, for **Primley Fantasy**.
H. C.—51, 53.

Class 6.—Shire Fillies, foaled in 1912. [6 entries.]

- 20 I. (£15, & Champion.)—SIR ARTHUR NICHOLSON, Highfield Hall, Leek, for **Boycroft Forest Queen** 78352, bay, bred by F. S. Hawthorn, Roycroft Lodge, Uttoxeter; s. Ratcliffe Forest King 23622, d. Roycroft Queen 38307 by Aulseby Cheur de Lion 20197.
- 57 II. (£10.)—THE EDGCOTE SHORTHORN CO. LTD., Edgcote, Banbury, for **Blackthorn Betty** 73490, bay, bred by A. E. S. Hepworth, Marsh Gibbon, Bicester; s. Halshead Blue Blood 27397, d. Blackthorn Queen 73497 by Ravenspur 22709.
- 58 III. (£5.)—F. W. GRIFFIN, Boro' Fen, Peterborough, for **Boro' Brilliant** 73846, bay; s. Moulton Victor King 26609, d. Boro' Alberta 33195 by Boro' Menestrel 20295.
- 61 R. N. & H. C.—T. A. W. NICHOLSON, Manor Farm, Feltham, Norfolk, for **Magna Forest Queen**.

Class 7.—Shire Mares, foaled in or after 1911, with Foals at foot.

[9 entries.]

- 59 I. (£15.)—W. & H. WHITLEY, Primley Farm, Paignton, for **Rickford Gem** 72188, bay, foaled in 1911, bred by the Exors. of the late Lord Winter-stoke, Combe Lodge, Blandon, Bristol; s. King Cole 7th 23351, d. Rickford Dazzle 6167 by Childwick Champion 22215. [Foal by Primley Eminence 31745.]
- 63 II. (£10.)—THE EDGCOTE SHORTHORN CO. LTD., Edgcote, Banbury, for **Chirkehill Forest Queen** 73021, bay, foaled in 1912, bred by Ralph Webster, Cubley, Derby; s. Redlynch Forest King 23626, d. Cubley Lady 47586 by Royal Warrior 16843. [Foal by Champion's Chasman 22221.]
- 56 III. (£5.)—T. MORRIS LOWE, Stanton House, Burton-on-Trent, for **Stantonhouse Victress** 72517, bay, foaled in 1911, bred by Joe Durman, Redwood Farm, Hunsitham, Devon; s. Tatton Dray King 23777, d. Redwood Flower 72197 by Blythwood Bay 18533. [Foal by Powisland Champion 28673.]
- 65 R. N. & H. C.—A. R. GRIMES, Gleadthorpe Grange, Warsop, Mansfield, for **Binegar Lady Cole**.
H. C.—67.

Class 8.—Shire Mares, foaled in or before 1910, with Foals at foot.

[15 entries.]

- 55 I. (£15, & R. N. for Champion.)—J. G. WILLIAMS, Pendley Manor, Tring, for **Halshead Duchess** 7th 67223, bay, foaled in 1910, bred by John Bradley, Halshead, Leicester; s. Redlynch Forest King 23626, d. Halshead Duchess 6th 3495 by Menestrel 14180. [Foal by Norbury Menestrel 23543.]

¹ Prizes given by the Shire Horse Society.

² Champion Gold Medal given by the Shire Horse Society for the best Mare or Filly in Classes 4-8.

liv *Award of Live Stock Prizes at Nottingham, 1915.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor".]

- 72 II. (£10.)—THE EDGCOTE SHORTHORN CO., LTD., Edgcote, Banbury, for *Writtle Coming Queen* 65408, brown, foaled in 1909, bred by J. S. Hodge, The Hollings, Writtle Chelmsford; s. Ratcliffe Coming King 25608, d. Writtle Duchess 2nd 407, by Moors Regent 1742. [Foal by Stockman 3rd 344.]
- 74 III. (£5.)—SIR WALPOLE GREENWELL, BT., Marden Park, Woldingham, Surrey, for *Lanes Forest Queen* 17365, brown, foaled in 1910, bred by John Cotton, West-on-Trent; s. Redlynch Forest King 23826, d. Whitfield Bonnie 49302 by Whitfield Star 2928. [Foal by Champion's Goalkeeper 30286.]
- 73 IV. (£3.)—F. FARNSWORTH & SONS, Kineton, Warwick, for *Sister Mary* 4967, brown, foaled in 1904, bred by Walter McCreery, Hilton Park, Rugby; s. Lockinge Forest King 18805, d. Aldenham Maud 27348 by Harold Harefoot 13147. [Foal by Monnow Drayman 2566.]
- 77 R. N. & H. C.—THE EARL OF HARRINGTON, Elvaston Castle, Derby, for *Brookside Countess*.
H. C.—75, 82. C.—80, 85.

Class 9.—Shire Colt Foals, the produce of Mares entered in Classes 7 or 8.
[9 entries.]

- 93 I. (£10.)—ROBERTON ORMS, Hatton Hall, Derby, for *Ash Champion*, bay, foaled April 1; s. Childwick Champion 22215, d. Pendley May Queen 61471 by Tatton Friar.
- 89 II. (£5.)—SIR WALPOLE GREENWELL, BT., Marden Park, Woldingham, Surrey, for bay, foaled April 1; s. Champion's Goalkeeper 30286, d. Pailton Forest Lass 6145 by Ratcliffe Forest King 23822.
- 92 III. (£3.)—WILLIAM LOWE, Cauldwell, Burton-on-Trent, for *Cauldwell Champion*, bay, foaled April 23; s. Powisland Champion 28673, d. Stantonhouse Darling 6151 by Conquering Duke 17890.
- 87 R. N. & H. C.—THE EDGCOTE SHORTHORN CO., LTD., Edgcote, Banbury.

Class 10.—Shire Filly Foals, the produce of Mares entered in Classes 7 or 8.
[12 entries.]

- 106 I. (£10.)—J. G. WILLIAMS, Pendley Manor, Tring, for *Pendley Rose*, bay, foaled Feb. 10; s. Mimms Champion 26422, d. Rose 4314 by Insurgent 11668.
- 104 II. (£5.)—ROBERT L. MOND, Coombe Bank, Sundridge, near Sevenoaks, for brown, foaled April 10; s. Mimms Champion 26422, d. Ardy Ebony 50026 by Ardy Regent.
- 102 III. (£3.)—SIR ARTHUR NICHOLSON, Highfield Hall, Leek, for bay, foaled Jan. 27; s. Coronation 7th 29263, d. Leek Dainty 91487 by Girtton Meteor 19649.
- 105 R. N. & H. C.—J. G. WILLIAMS, for *Pendley Duchess*.
H. C.—96, 103. C.—95, 97, 104.

Class 11.—Shire Geldings, foaled in or before 1912.¹ [4 entries.]

- 108 I. (£15.)—LIVERPOOL CORPORATION, Veterinary Department, Municipal Offices, Liverpool, for *John Bull*, bay, foaled in 1905, bred by J. B. Gardner, Kinoulton, Notts; s. Intake Albert 20386, d. Kinoulton Lily 36296 by Nottingham Conqueror II. (£10.)—PETER WALKER & SON (Warrington & Burton) LIMITED, Warrington, for *Delight*, grey, foaled in 1910, bred by J. H. Fenikun, Oneacre, Leek; s. Redlynch Forest King 2333d, d. Pethills Flower 61381 by King of the Peak 17430.
- 109 III. (£5.)—LIVERPOOL CORPORATION, for *Jolly Jenkin*, bay, foaled in 1906, bred by Fred Trott, New Salts Farm, Shoreham-by-Sea; s. Hendre Champion 18059, d. Thrupp Blossom 34199 by Mona's Prince 9933.
- 107 R. N. & H. C.—R. C. COOPER, Waltham, Melton Mowbray.

Clydesdales.²

Class 12.—Clydesdale Stallions, foaled in 1914. [12 entries.]

- 112 I. (£15.)—WILLIAM DUNLOP, Dunure Mains, Ayr, for *Dunure Independence* (vol. 37, p. 127), bay, bred by James McGaw, Mount Pleasant, Stranraer; s. Baron of Baulysvie 11263, d. Rita 25309 by Marcellus 11110.
- 114 II. (£10.)—WILLIAM DUNLOP, for *Dunure Reply* (vol. 37, p. 8), black, bred by George Anderson, West Fingask, Old Meldrum; s. Dunure Footprint 13203, d. Pansy of West Fingask 29089 by Cairnbrodie Scout 12507.
- 115 III. (£5.)—JAMES FLEMING, Easter Coul, Auchterarder, for *Black Print*, black; s. Dunure Footprint 15203, d. Gem of Craigville 21597 by Prince Thomas 10242.
- 120 R. N. & H. C.—A. & W. MONTGOMERY, Netherhall and Banks, Kirkcudbright.
H. C.—117.

¹ Prizes given by the Shire Horse Society.

² £20 towards these Prizes were given by the Clydesdale Horse Society.

Award of Live Stock Prizes at Nottingham, 1915. 1v

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 13.—*Clydesdale Stallions, foaled in 1913.* [6 entries.]

- 125 I. (£15, & Champion.¹)—WILLIAM DUNLOP, Dunure Mains, Ayr, for *Dunure Kaleidoscope* 18335, bay, bred by Sir John Gilmour Bt., Montrose, Leven; s. Baron of Buchlyvie 11283, d. Imperial Beauty 21346 by Everlasting 11331.
 124 II. (£10, & R. N. for Champion.¹)—WILLIAM DUNLOP, for *Dunure Birkenwood* 18327, bay, bred by James Gray, Birkenwood, Gargunnoch; s. Apukwa 14567, d. Lady Jane 19589 by Balmadie Queen's Guard 10966.
 128 III. (£5.)—A. & W. MONTGOMERY, Netherhall and Banks, Kirkcudbright, for *Scottish Signet* 18542, bay, bred by John Cruickshank, Kempton, Twynholm; s. Signet 16916, d. Kate of Kempton 32452 by Rothlieh 11870.

Class 14.—*Clydesdale Stallions, foaled in 1912.* [7 entries.]

- 130 I. (£15.)—ROBERT BRYDON, The Dene, Seaham Harbour, for *Phillipine* 18044, bay, bred by J. G. Phillips, The Bagraih, Low Row, Carlisle; s. Bonnie Buchlyvie 14032, d. Denton Lady 33599 by Royal Bounty 19873.
 131 II. (£10.)—WILLIAM DUNLOP, Dunure Mains, Ayr, for *Dunure Freshful* 17867, bay, bred by James Porter, Sauchenloan, Inch; s. Perfect Melon 13123, d. Ellen Porter 28686 by Baron Ruby 11268.
 135 III. (£5.)—A. & W. MONTGOMERY, Netherhall and Banks, Kirkcudbright, for *Pyramid* 18496, brown, bred by William Cran, Gerrie, Drumblade, Huntly; s. Everlasting 11331, d. Kate of Gerrie 32436 by Prince of Craigwillie 11462.
 129 R. N. & H. C.—JOHN R. BEATTIE, Baurch Farm, Higg, Carlisle, for *Baurch Bandmaster*.

Class 15.—*Clydesdale Fillies, foaled in 1914.* [7 entries.]

- 140 I. (£15.)—JAMES FLEMING, Easter Coul, Auchterarder, for *Balcain Primrose*, bay, bred by William Ritchie, Balcain, Old Meldrum; s. Dunure Footprint 15293, d. Waterion Baroness 30371 by Casablanca 10673.
 138 II. (£10.)—WILLIAM DUNLOP, Dunure Mains, Ayr, for *Dunure Fact*, bay, bred by William Ritchie, Balcain, Old Meldrum; s. Dunure Footprint 15293, d. Balcain's Faure 38103 by Star of Cowal 15216.
 141 III. (£5.)—JAMES GRAY, Birkenwood, Gargunnoch, for *Nellie Paterson*, brown, bred by William Paterson, Broadgate, Ruthwell; s. Apukwa 14567, d. Queen Mary 18248 by Baron's Pride 9122.

Class 16.—*Clydesdale Fillies, foaled in 1913.* [5 entries.]

- 147 I. (£15.)—JAMES KILPATRICK, Craigie Mains, Kilmarnock, for *Craigie Sylvia*, bay, bred by Robert Chapman, Johnstone Farm, Glenboig; s. Apukwa 14567, d. Heather Charm 26183 by Baron's Pride 9122.
 144 II. (£10.)—WILLIAM DUNLOP, Dunure Mains, Ayr, for *Dunure Hagar*, black, bred by John P. Sleigh, St. John's Wells, Fyvie; s. Dunure Footprint 15293, d. Elaine 36106 by Baron's Pride 9122.
 146 III. (£5.)—JAMES GRAY, Birkenwood, Gargunnoch, for *Meta*, brown, bred by William Paterson, Broadgate, Ruthwell; s. Apukwa 14567, d. Queen Mary 18248 by Baron's Pride 9122.
 143 R. N. & H. C.—ROBERT BRYDON, The Dene, Seaham Harbour, for *Saucy Queen*.

Class 17.—*Clydesdale Fillies, foaled in 1912.* [5 entries.]

- 148 I. (£15, & Champion.²)—ANDREW BROOKS, North Elphinstone, Tranent, for *Lady Betty*, light bay; s. Apukwa 14567, d. Bot of Boquhan 23388 by Baron's Pride 9122.
 152 II. (£10.)—ROBERT PARK, Brunstane, Portobello, for *Prudence*, bay; s. Dunure Footprint 15293, d. Muircleugh Meir 18448 by Marmion 11429.
 150 III. (£5.)—WILLIAM DUNLOP, Dunure Mains, Ayr, for *Dunure Essence*, bay, bred by Richard Dunn, Udston, Hamilton; s. Montrose Mac 6958, d. Katarina 19427 by Baron's Pride 9122.

Class 18.—*Clydesdale Mares, with Foals at foot.* [3 entries.]

- 154 I. (£15, & R.N. for Champion.²)—WILLIAM DUNLOP, Dunure Mains, Ayr, for *Dunure Chaser* 37306, brown, foaled in 1911; s. Baron of Buchlyvie 11263, d. Dunure Ideal 21283 by Auchenflower 12067. [Foal by Apukwa 14567.]
 155 II. (£10.)—WILLIAM DUNLOP, for *Dunure Mimosa*, brown, foaled in 1911; s. Dunure Footprint 15293, d. Montrose Mimosa 15382 by Montrose Ronald 11121. [Foal by Gallant Stewart 16603.]

¹ Champion Prize of £10 given by the Clydesdale Horse Society for the best Stallion in Classes 12-14.

² Champion Prize of £10 given by the Clydesdale Horse Society for the best Mare or Filly in Classes 15-18.

lvi Award of Live Stock Prizes at Nottingham, 1915.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor".]

Class 19.—*Clydesdale Foals, the produce of Mares entered in Class 18.* [3 entries.]

- 157 I. (£10.)—WILLIAM DUNLOP, Dunure Mains, Ayr, for bay filly, foaled May 20; s. Apukwa 1567, d. Dunure Chosen 3796 by Baron of Buchlyvie 11265.
158 II. (£5.)—WILLIAM DUNLOP, for black colt, foaled March 16; s. Gallant Stewart 1669, d. Dunure Mingsa by Dunure Footprint 15203.

Class 20.—*Clydesdale Geldings, foaled in or before 1912.* [5 entries.]

- 161 I. (£15.)—WILLIAM KERR, Old Grattney, Greta, Carlisle, for Jim, bay, foaled in 1912, bred by James McMillan, Brockleock, Maybole; s. Dunstin 12351.
163 II. (£10.)—SCOTTISH CO-OPERATIVE WHOLESALE SOCIETY, LTD., 85 Morrison Street, Glasgow, for Willie, dark brown, foaled in 1910, bred by William Hay, Port Sey, Banffshire; s. Girvan Chief.
160 III. (£5.)—WILLIAM D. DRYDEN, Dene House and Seaham Hall Farms, Seaham Harbour, for Gay Lad, brown, foaled in 1912, bred by John W. Brown, Skellyton, Larkhall; s. Sir Galatad 14860.
159 E. N. & H. C.—ROBERT BRYDON, The Dene, Seaham Harbour, for Dan.

Suffolks.¹

Class 21.—*Suffolk Stallions, foaled in 1914.* [3 entries.]

- 165 I. (£15.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Pioneer 4374; s. Sudbourne Peter 3955, d. Sudbourne Cowslip 8401 by Sudbourne Sunshine 3574.
164 II. (£10.)—RAYMOND J. CATCHPOLE, The Hall, Darsham, Saxmundham, for Darsham Sikh 4383, bred by A. Rope, Leiston; s. Darsham Sheikh 4139, d. Garnet 5565 by Prince Albert 2525.
166 III. (£5.)—A. CARLVE SMITH, Sutton Hall, Woodbridge, for Ashmoor Warrior 4382; s. Bentley War Cry 3028, d. Ashmoor Sylvia 6750 by Dennington Cupbearer.

Class 22.—*Suffolk Stallions, foaled in 1913.* [6 entries.]

- 171 I. (£15, & Champion²)—ARTHUR T. PRATT, Morston Hall, Trimley, Ipswich, for Morston Friday 4265, bred by R. H. Winch, Harkstead Hall, Norwich; s. Bawdsey Harvester 3079, d. Pride 2nd 6153 by Neptune 3005.
169 II. (£10.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Beau-Brocade 4255; s. Sudbourne Beau Monde 3598, d. Sudbourne Tilly 6862 by Sudbourne Arabi 3287.
170 III. (£5.)—KENNETH M. CLARK, for Sudbourne Peter Pan 4214; s. Sudbourne Peter 3955, d. Sudbourne Beatrice 6732 by Sudbourne Arab 3309.
173 R. N. & H. C.—ARTHUR T. PRATT, for Morston Saddler.

Class 23.—*Suffolk Stallions, foaled in 1912.* [5 entries.]

- 177 I. (£15, & R. N. for Champion²)—ARTHUR T. PRATT, Morston Hall, Trimley, Ipswich, for Morston Laddie 2nd 4221, bred by John P. Jones, Henley Hall, Woodbridge; s. Bawdsey Laddie 3637, d. Port 5665 by Prince Albert 2525.
176 II. (£10.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Bellman 4153; s. Sudbourne Beau Monde 3598, d. Sudbourne Massie 6869 by Eclipse.
174 III. (£5.)—RAYMOND J. CATCHPOLE, The Hall, Darsham, Saxmundham, for Darsham Valentine 4395; s. Bawdsey Harvester 3076, d. Darsham Roadbud 7458 by Sproughton Sultan 3264.
173 R. N. & H. C.—F. SCOTT CATCHPOLE, Darsham, Saxmundham, for Bentley Ring-leader.

Class 24.—*Suffolk Fillies, foaled in 1914.* [2 entries.]

- 179 I. (£15.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Dona 8201; s. Sudbourne Peter 3955, d. Sudbourne Dolly 5321 by Sudbourne Count.
178 II. (£10.)—KENNETH M. CLARK, for Sudbourne Belinda 8250; s. Sudbourne Peter 3955, d. Sudbourne Bella 2nd 5904 by Sudbourne Count 3257.

Class 25.—*Suffolk Fillies, foaled in 1913.* [3 entries.]

- 182 I. (£15.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Redstar 7833; s. Sudbourne Peter 3955, d. Sudbourne Red Queen 5354 by Sudbourne Count 3257.
181 II. (£10.)—KENNETH M. CLARK, for Sudbourne Doris 7833; s. Sudbourne Peter 3955, d. Sudbourne Dolly 5321 by Sudbourne Count 3257.
180 III. (£5.)—RAYMOND J. CATCHPOLE, The Hall, Darsham, Saxmundham, for Darsham Darby 7983, bred by J. Freeman, Henley, Ipswich; s. Sudbourne Arab 3309, d. Bawdsey Largesse 7052 by Bawdsey Harvester 3076.

¹ £50 towards these Prizes were given by the Suffolk Horse Society.
² The "Coronation" Challenge Cup given by the Suffolk Horse Society for the best Stallion in Classes 21-23.

Award of Live Stock Prizes at Nottingham, 1915. lvii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 26.—*Suffolk Fillies, foaled in 1912.* [1 entry.]

- 133 I. (£15).—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Laurel 7668; s. Sudbourne Arabi 3287, d. Sudbourne Laura 6027 by Sunshine 7734.

Class 27.—*Suffolk Mares, with Foals at foot.* [2 entries.]

- 184 I. (£15).—E. SCOTT CATCHPOLE, The Priory, Darsham, Saxmundham, for Cratfield Star 6503, foaled in 1909, bred by J. Burton, Cratfield, Halesworth; s. Dennington Cupbearer 3886, d. Doughty by Border Minster 2237. [Foal by Bentley Cupbearer.]
185 II. (£10).—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Redwing 6388, foaled in 1908; s. Sudbourne Edward 3304, d. Sudbourne Redstart 5400 by Wedgewood 1749. [Foal by Sudbourne Peter 3665.]

Class 28.—*Suffolk Foals, the produce of Mares entered in Class 27.* [2 entries.]

- 186 I. (£10).—E. SCOTT CATCHPOLE, The Priory, Darsham, Saxmundham, for filly, foaled March 20; s. Bentley Cupbearer 4044, d. Cratfield Star 6503 by Dennington Cupbearer 3886.
187 II. (£5).—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for colt, foaled January 31; s. Sudbourne Peter 3355, d. Sudbourne Redwing 6388 by Sudbourne Edward 3304.

Hunters.¹

Class 29.—*Hunter Colts or Geldings, foaled in 1914.* [9 entries.]

- 189 I. (£15).—BARONESS BURTON, Dochfour, Inverness, for Sunday Sleep, liver chestnut gelding; s. The Chair (vol. 20, p. 309 G.S.B.), d. Peace by War Path (vol. 15, p. 203 G.S.B.).
188 II. (£10).—SIR MERRIK BURRELL, BT., Knepp Castle, West Grinstead, Sussex, for Black Beauty, black col; s. The Best 147, d. Lovey Mary 4217 by Castlecock 2.
191 III. (£5).—LORD MIDDLETON, Birdsall, Malton, for Greeting, bay colt; s. Crathorne (vol. 30, p. 445 G.S.B.), d. Griffarth 2703 by Hackler (vol. 17, p. 251 G.S.B.).
193 R. N. & H. C.—E. W. ROBINSON, Liscombe, Leighton Buzzard, for Al. H.C. 194.

Class 30.—*Hunter Geldings, foaled in 1913.* [14 entries.]

- 206 I. (£15).—WILFRED M. PLEVINS, Woodford House, near Thrapston, for Oyster Boy, light bay, bred by E. N. Plevins, Woodford House, near Thrapston; s. Drummond's Pride (vol. 18, p. 390 G.S.B.), d. Elektra 4120 by Blankney (vol. 14, p. 767 G.S.B.).
198 II. (£10).—SIR MERRIK R. BURRELL, BT., Knepp Castle, West Grinstead, for King Richard (Supp. No. 347), bay; s. Dennis Richard (vol. 19, p. 821 G.S.B.), d. Surprise 3014 by Silver King 54.
205 III. (£5).—THE REV. E. T. MURRAY, The Rectory, Bourton-on-the-Hill, Moreton-in-Marsh, for Pasch Egg, chestnut; s. Thistledown (vol. 21, p. 491 G.S.B.), d. Diana 4th 4889 by Grand National (vol. 18, p. 347 G.S.B.).
204 IV. (£3).—MRS. H. JEROME, Dilton Hall, York, for Tarmac, bay; s. Fincastle (vol. 20, p. 733 G.S.B.).
209 R. N. & H. C.—T. H. TOMLINSON, Chaddesden, Derby, for Meynell Ingram.

Class 31.—*Hunter Geldings, foaled in 1912.* [7 entries.]

- 214 I. (£15).—THOMAS KNAGGS, Tofts Farm, Marske-by-the-Sea, for Grand Slam, chestnut, bred by Henry Shipley, Shipley Tce, Marske-by-the-Sea; s. Red Hall 2nd (vol. 22, p. 587 G.S.B.), d. by Bass Rock 2nd.
212 II. (£10).—WALTER HATTER, The Wharf, Market Overton, Oakham, for Traveller, bay; s. Travelling Lad (vol. 18, p. 706 G.S.B.), d. Blankney Girl by Blankney (vol. 16, p. 767 G.S.B.).
211 III. (£5).—SKIDMORE ASHBY, Rivernook Farm, Wraybury, Bucks., for Dromkerry (Supp. No. 369), chestnut, bred by John Neill, The Park, Killarney, Co. Kerry; s. Master Bill (vol. 21, p. 272 G.S.B.), d. Glens 4906 by Glenvannon (vol. 16, p. 622 G.S.B.).
215 R. N. & H. C.—FREDERICK REYNARD, Sunderlandwick, Driffield, for Chancellor.

Class 32.—*Hunter Fillies, foaled in 1914.* [8 entries.]

- 218 I. (£15).—SIR MERRIK R. BURRELL, BT., Knepp Castle, West Grinstead, Sussex, for The Bride 5th 501, bay; s. Hanover Square (vol. 21, p. 706 G.S.B.), d. Surprise 3014 by Silver King 54.
220 II. (£10).—WILLIAM A. HOLMES, The Grange, Lazenby, Eston, Yorks., for Gold Link, chestnut; s. Passo Rouh's, d. Lady Dora 2nd 4999 by Pitch and Toss.
223 III. (£5).—THE REV. E. T. MURRAY, The Rectory, Bourton-on-the-Hill, Moreton-in-Marsh, for Prudence 5028, chestnut; s. Puro Caster (vol. 22, p. 380 G.S.B.), d. Diana 4th 4889 by Grand National (vol. 18, p. 347 G.S.B.).
222 R. N. & H. C.—LORD MIDDLETON, Birdsall, Malton, for Madeira.

¹ £100 towards these Prizes were given by a Member of the R.A.S.F.

lviii *Award of Live Stock Prizes at Nottingham, 1915.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor,"]

Class 33.—Hunter Fillies, foaled in 1913. [10 entries.]

- 226 I. (£15, & Champion.¹)—CAPTAIN CLIVE BEHRENS, Swinton Grange, Malton, for *Larkspur* 4935, brown; s. Jovial (vol. 2, p. 553 G.S.B.), d. Whinflower 3801 by The Hero (vol. 18, p. 83 G.S.B.).
 234 II. (£10.)—WILLIAM H. SHIERS, Needwood House, Burton-on-Trent, for Nuthush 4738, bay; s. Red Sahib (vol. 19, p. 779 G.S.B.), d. Beechnut 2nd 3284.
 228 III. (£5.)—PHILIP BURNETT, Picksharp Farm, Birdsall, Malton, for *Butterfly*, brown; s. Wales (vol. 18, p. 854 G.S.B.), d. Mermaid 6th 4330 by Sailor King (vol. 18, p. 630 G.S.B.).
 232 R. N. & H. C.—HAROLD S. HOPPER, Kellythorpe, Driffield, for *Mistletoe* 2nd, H. C.—229.

Class 34.—Hunter Fillies, foaled in 1912. [10 entries.]

- 236 I. (£15, & R.N. for Champion.¹)—CAPT. CLIVE BEHRENS, Swinton Grange, Malton, for *Sylvia* 4th 4472, chestnut; s. Berrill (vol. 18, p. 736 G.S.B.), d. Selby 5714 by Selby (vol. 15, p. 355 G.S.B.).
 238 II. (£10.)—G. E. GIBSON, M.R.C.V.S., Highfield, Oakham, for *Miss Willow* 4567, bay; s. Wild Willow (vol. 20, p. 533 G.S.B.), d. Miss Tickle 4566 by Slyboots 2nd (vol. 16, p. 367 G.S.B.).
 241 III. (£5.)—W. P. JEFFCOCK, West Common, Harpenden, for *Ruby* 7th 4694, bay, bred by F. Swain, Thistleworth Farm, West Grinstead; s. Hanover Square (vol. 21, p. 706 G.S.B.), d. Kitty 8th 4683.
 244 R. N. & H. C.—F. B. WILKINSON, Edwinstowe, Newark, for *Princess Mary*, H. C.—237, 242.

Class 35.—Hunter Mares (Novice), foaled in or after 1917, with Foals at foot, up to from 12 to 14 stone. [6 entries.]

- 248 I. (£15.)—THE MARCHIONESS OF DOWNSHIRE, Easthampstead Park, Wokingham, for *Bark Not* 4368, chestnut, foaled in 1911, bred by J. A. Mullens, Barrow Hills, Longcross, Surrey; s. Avarice 107, d. Treble 3936 by Royal Meath (vol. 17, p. 691 G.S.B.). [Foal by Dundreary.]
 246 II. (£10.)—WILLIAM CHENEY, Barnwell Lodge, Oundle, for *Kilts* 3474, bay, foaled in 1907, bred by F. Franklin, Pauder's Quay, Towcester; s. Scotch Cup (vol. 20, p. 1023 G.S.B.). [Foal by Buchelar 41.]
 251 III. (£5.)—G. T. MARRINER, Rowston Manor, Lincoln, for *Fair Rosamond*, brown, foaled in 1911, bred by F. B. Wilkinson, Cavendish Lodge, Edwinstowe, Newark; s. Newburgh (vol. 20, p. 206 G.S.B.), d. Rosalinda. [Foal by Cecilia.]
 249 R. N. & H. C.—E. W. GOLDSWORTHY, Yaldham Manor, Kemsing, near Sevenoaks, for *Turquoise* 2nd, H. C.—247, 250.

Class 36.—Hunter Mares (Novice), foaled in or after 1907, with Foals at foot, up to more than 14 stone. [No entry.]

Class 37.—Hunter Mares with Foals at foot, up to from 12 to 14 stone. [13 entries.]

- 259 I. (£15, & Champion.²)—LORD MIDDLETON, Birdsall, Malton, for *Modwena* 3175, bay, foaled in 1905; s. Wales (vol. 18, p. 854 G.S.B.), d. Madame Modjesca (vol. 17, p. 426 G.S.B.) by Gordon (vol. 18, p. 552 G.S.B.). [Foal by Crathorne (vol. 24, p. 445 G.S.B.).]
 256 II. (£10.)—LORD MIDDLETON, for *Fair Geraldine* (vol. 20, p. 192), dark bay, foaled in 1901, bred by Mr. McCleary; s. Desmond (vol. 19, p. 304 G.S.B.), d. De Estella (vol. 18, p. 580 G.S.B.) by Lord Gough (vol. 18, p. 35 G.S.B.). [Foal by Crathorne (vol. 20, p. 445 G.S.B.).]
 253 III. (£5.)—ARTHUR S. BOWLEY, Gilston Park, Harlow, for *First Choice* 2nd 3812, brown, foaled in 1905, bred by Mr. Stuckey, North Weald, Essex; s. Chosen (vol. 18, p. 658 G.S.B.), d. by Aescetic 2nd. [Foal by Captain Jack (vol. 21, p. 723 G.S.B.).]
 254 R. N. & H. C.—SIR MERRIK R. BURRILL, BT., Knapp Castle, West Grinstead, for *Surprise*, H. C.—252, 257, 258, 260, 261.

¹ Champion Gold Medal given by the Hunters' Improvement and National Light Horse Breeding Society for the best Filly not exceeding three years old, in Classes 33-34, which is registered in the Hunter Stud Book, or whose entry was tendered within a month of the Award.

² Champion Gold Medal given by the Hunters' Improvement and National Light Horse Breeding Society for the best Mare, four years and upwards, in Classes 35-36, which is registered in the Hunter Stud Book, or whose entry was tendered within a month of the Award.

Award of Live Stock Prizes at Nottingham, 1915. lix

(Unless otherwise stated, each prize animal named below was "bred by exhibitor.")

Class 38.—Hunter Mares with Foals at foot, up to more than 14 stone. [7 entries.]

- 250 I. (£15.) & R. N. for Champion.¹—SIR MERRIE R. BURRELL, BT., Knepp Castle, West Grinstead, for *Lovely Mary* 4247, brown, foaled in 1900, bred by the Earl of Lonsdale, Barleythorpe, Oakham; s. Castlenock 2, d. Sister Mary 3005 by Brown Prince (vol. 15, p. 601 G.S.B.). [Foal by the Best 147.]
- 271 II. (£10.)—W. N. WRIGHT, Edwinstowe House, Edwinstowe, Newark, for *Flash Lady* 4618, brown, foaled in 1906, bred by Charles Brereton, Wen-on-hum, Swaffham; s. Master Lovat (vol. 19, p. 449 G.S.B.). [Foal by Stortford (vol. 22, p. 184 G.S.B.).]
- 268 III. (£5.)—W. P. JEFFCOCK, West Common, Harpenden, for *The Roethings*, chestnut, foaled in 1904. [Foal by Captain Jack (vol. 21, p. 729 G.S.B.).]
- 265 R. N. & H. C.—CAPT. THE HON. HUGH BURDETT-MONEY-COUTTS, Stoodleigh Court, Tiverton, for *Gaiety Girl* 2nd.

Class 39.—Hunter Colt Foals, the produce of Mares in Classes 35 to 38. [13 entries.]

- 277 I. (£10.)—LORD MIDDLETON, Birdsall, Malton, for bay, foaled April 8; s. Dervish (vol. 4), d. Griffiths 2703 by Hackler (vol. 16, p. 187 G.S.B.).
- 279 II. (£5.)—LORD MIDDLETON, for bay, foaled April 24; s. Crathorne (vol. 20, p. 445 G.S.B.), d. Medwena 4175 by Wales (vol. 18, p. 851 G.S.B.).
- 276 III. (£3.)—WILLIAM A. HOLMES, The Grange, Lazenby, Eton, Yorks., for *Sporting Print*, chestnut, foaled May 1; s. Lord of the Valley, d. Miss Kelly 4929 by Drummer Kelly.
- 272 R. N. & H. C.—ARTHUR S. BOWLEY, Gilston Park, Harlow, for *Dogger Bank*, H. C.—278, 281, 282.

Class 40.—Hunter Filly Foals, the produce of Mares in Classes 35 to 38. [12 entries.]

- 291 I. (£10.)—W. P. JEFFCOCK, West Common, Harpenden, for *Britannia*, bay, foaled April 14; s. Captain Jack (vol. 21, p. 729 G.S.B.), d. The Roethings.
- 285 II. (£5.)—SIR MERRIE R. BURRELL, BT., Knepp Castle, West Grinstead, for black, foaled March 30; s. The Best 147, d. Surpr se 3014 by Silver King 54.
- 292 III. (£3.)—G. T. MARRINER, Howston Manor, Lincoln, for bay, foaled March 17; s. Cedrian (vol. 22, p. 737 G.S.B.), d. Fair Rosamond by Newburgh (vol. 20, p. 505 G.S.B.).
- 285 R. N. & H. C.—ARTHUR S. BOWLEY, Gilston Park, Harlow, for *Queen Elizabeth*, H. C.—286, 289, 293, 296.

Polo and Riding Ponies.²

Class 41.—Polo and Riding Pony Colts, Fillies or Geldings, foaled in 1914. [6 entries.]

- 288 I. (£10.)—TRESHAM GILBEY, Whitehall, Bishop's Stortford, for *Good Boy* (Supp. 1915), chestnut colt; s. Right Forard 368, d. Good Girl 2nd 2861.
- 297 II. (£5.)—JOHN S. BAREWELL, Cromhall, Charnfield, Glos., for *Stolen Wings*, chestnut filly; s. White Wings 501, d. Robbery 2571 by Gold Medalist (vol. 20, p. 1022 G.S.B.).
- 302 III. (£3.)—C. HOWARD TAYLOR, Hampole Priory, Doncaster, for *Plume* (Supp. 1914), chestnut filly; s. Field Marshal 513, d. Silver Tail 573 by Low Water (vol. 15, p. 137 G.S.B.).
- 301 R. N. & H. C.—G. NORRIS MIDWOOD, North Road, Congleton, for *Colleen* 4th, H. C.—290.

Class 42.—Polo and Riding Pony Colts, Fillies or Geldings, foaled in 1913. [7 entries.]

- 303 I. (£10.)—THE HON. MRS. DEDRY-LOVE, Locko Park, Derby, for *Wherstead* (Supp. 1913), bay colt; s. Ipswich (vol. 20, p. 928 G.S.B.), d. Nora Creina 2322.
- 308 II. (£5.)—G. NORRIS MIDWOOD, North Road, Congleton, for *Kilrain* (Supp. 1915), brown colt, bred by the late Sir John Barker, Bt.; s. Arthur D 503, d. Killarney 2nd.
- 305 III. (£3.)—TRESHAM GILBEY, Whitehall, Bishop's Stortford, for *Naughty Girl* (Supp. 1914), chestnut filly; s. Right Forard 368, d. Good Girl 2nd 2861.
- 300 R. N. & H. C.—C. HOWARD TAYLOR, Hampole Priory, Doncaster, for *Calcium*, H. C.—307.

¹ Champion Gold Medal given by the Hunters' Improvement and National Light Horse Breeding Society for the best Mare, four years and upwards, in Classes 35-38, which is registered in the Hunter Stud Book, or whose entry was tendered within a month of the Award.

² £25 towards these Prizes were given by the National Pony Society.

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1915-16

[Unless otherwise stated, each prize animal named below was "bred by exhibitor".]

Class 43.—Polo and Riding Pony Stallions, foaled in or before 1912, not exceeding 15 hands. [6 entries.]

- 310 I. (£10, & Champion.1.)—LORD LUCAS, Wrest Park, Amptill, for Jacko 442, chestnut, foaled in 1904.
 315 II. (£3, & R. N. for Champion.1.)—C. HOWARD TAYLOR, Hampole Priory, Doncaster, for Field Marshal 212, chestnut, foaled in 1907; s. Marechal Niel 363, d. Polo Queen.
 314 III. (£3.)—J. MUMFORD, Stud Farm, Knightcote, Leamington Spa, for Prairie Fire 755, bay, foaled in 1907, bred by L. Neumann; s. Flying Fox (vol. 18, p. 659 G.S.B.), d. Firelight (vol. 19, p. 198 G.S.B.) by Fitz James (vol. 14, p. 188 G.S.B.).
 313 R. N. & H. C.—G. NORRIS MIDWOOD, North Rode, Congleton, for Victory 2nd.

Class 44.—Polo and Riding Pony Fillies or Geldings, foaled in 1912. [1 entry.]

- 316 I. (£10, & Champion.2.)—TRESHAM GILBEY, Whitehall, Bishop's Stortford, for Forward Girlie (Supp. 1913), bay filly; s. Right Forard 568, d. Good Girl 2nd 281.

Class 45.—Polo and Riding Pony Mares, with Foals at foot, not exceeding 14.2 hands. [7 entries.]

- 318 I. (£10, & R. N. for Champion.2 & 3.)—JOHN S. BAKEWELL, Cromhall, Charlfield, Glos., for Robbery 2571, chestnut, foaled in 1905; bred by Mr. Griffiths, Cricknell Farm, Pembridge; s. Gold Medalist (vol. 20, p. 1022 G.S.B.), d. by Prince Craft (vol. 14, p. 164 G.S.B.). [Foal by Stealaway].
 320 II. (£5, & Champion.3.)—GERALD LOUSADA, Bridge House, Higher Walton, Warrington, for Violet, bay, foaled in 1906. [Foal by Stortford].
 323 III. (£3.)—MISS G. W. SAMUEL, Woodbank Hall, near Chester, for Catch 282, brown, foaled in 1904. [Foal by Chief Butler 732].

Cleveland Bays or Coach Horses.

Class 46.—Cleveland Bay or Coaching Stallions, any age. [1 entries.]

- 325 I. (£10.)—JOHN LETT, Cleveland Stud Farm, Rillington, York, for Rillington Victor 2536 (Coaching), bay, foaled in 1910, bred by W. Wood, Bilstale, Helmsley; s. Braoston Prince 2451, d. Queen's Rocket 945 by Prince of the Dales.
 327 II. (£5.)—GEORGE SCOBY, Beadlam Grange, Nawton, Yorks, for Beadlam Saxon 2nd 1721 (Cleveland Bay), foaled in 1911; s. Riccal Bridge, d. Beadlam Violet by Sultan 667.
 324 III. (£3.)—HIS MAJESTY THE KING, Buckingham Palace, London, S.W., for Tantallus 2544 (Coaching), bay, foaled in 1911, bred by Dobson Cates, Eastgate, Pickering; s. Braoston Prince 2451, d. Violet 1199 by Lord Chief Justice 1214.

Class 47.—Cleveland Bay or Coaching Mares, with Foals at foot. [2 entries.]

- 329 I. (£10.)—J. W. LETT, Scagglethorpe Manor, Malton, for Lady Alice (Coaching), bay, foaled in 1908, bred by J. Ryder, Willerfoss, York; s. Beacon Prince 2227, d. Fan 1151 by Lord Chief Justice 1214. [Foal by Rillington Victor 2536].
 326 II. (£5.)—HIS MAJESTY THE KING, Buckingham Palace, London, S.W., for Woodland's Queen 1.17 (Coaching), bay, foaled in 1910, bred by Winspear Bros., Aisgby, Sleaford; s. Potic Hutton 2412, d. Fann 1046 by Royal Dalesman 2413. [Foal by Willoughby Emperor 2253].

Hackneys.¹

Class 48.—Hackney Stallions, foaled in 1914. [7 entries.]

- 330 I. (£15.)—ERNEST BEWLEY, Danum, Rathgar, co. Dublin, for Danum Ballyowen, chestnut; s. Polonus 4331, d. Sprightly Clara 2191 by Royal Danegelt 535.
 325 II. (£10.)—SIR LEO KNOWLES, Bt., C.V.O., Westwood, Fendebury, Manchester, for Salford Victor, chestnut; s. Hopwood Vicroy 2250, d. Knowle Haina 13633 by His Majesty 2513.
 333 III. (£5.)—HENRY GILDING, Gateacre, Liverpool, for Beekingham Axholme Hero, chestnut, bred by Robert Surfleet, Beekingham, Gainsborough; s. Admiral Crichton 3578, d. Beekingham Polly Helmsley 17121 by Polonus 4331.
 332 R. N. & H. C.—GEORGE A. COBB, Woodside, Garston, Herts., for Garston Polonus.

¹ Champion Gold Medal given by the National Pony Society for the best Stallion or Colt in Classes 41-43.

² Champion Gold Medal given by the National Pony Society for the best Mare or Filly in Classes 41, 42, 44, and 45.

³ Bronze Medal given by the National Pony Society for the best Foal in Class 45, entered or eligible for entry in the Supplement to the National Pony stud Book.

⁴ £30 towards these Prizes were given through the Hackney Horse Society.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 49.—Hackney Stallions, foaled in 1913. [6 entries.]

- 332 I. (£15.)—H. V. SHERRINGHAM, South Creak, Fakenham, for *Creaks Royal Prince* 1903, chestnut; s. Antonius 10559, d. *Creaks Sylvia* 15017 by *Challenger* 3013.
 336 II. (£10.)—GEORGE A. COBR, Wood-side, Garston, Herts., for *Gurston Leopold* 12830, chestnut; s. Leopard 9783, d. *Terrington Blue Stocking* 18651 by *Caxton* 2398.
 337 III. (£5.)—HENRY B. BRANDT, Capenor, Nutfield, Surrey, for *Capenor Adjutant* 12589, chestnut; s. Admiral Crichton 8578, d. *Ryburn Lucinda* 17896 by *Ganymede*.
 340 R. N. & H. C.—H. HINRICHSSEN, Grotto House, Over Peover, Knutsford, for *Graliano*.

Class 50.—Hackney Stallions, foaled in or before 1912. [5 entries.]

- 336 I. (£15, & Champion.)—WALTER BRIGGS, Linden Hall, Borwick, near Carnforth, for *King Augustus* 12094, chestnut, foaled in 1911, bred by Richard Ford, Garton Driffield; s. *King of the East* 10725, d. *Welcome Home* 18649 by *Copper King* 7661.
 344 II. (£10, & R. N. for Champion.)—HENRY B. BRANDT, Capenor, Nutfield, Surrey, for *Axholme Commander* 12298, chestnut, foaled in 1912, bred by William Green, Leysgate, Fordingham, Yorks.; s. *Polonius* 4931, d. *Rosalette* 1857 by *Beauder* 4064.
 345 III. (£5.)—JOHN BEAL, Cowham, Sledmere, Manton, for *General French*, chestnut, foaled in 1912; s. *King of the East* 10725, d. *Fylde Zoline* 12654 by *Astonishment* 2nd.
 348 R. N. & H. C.—JEREMIAH BREEDON, Annesley Road, Hucknall, for *Pearl King*.

Class 51.—Hackney Fillies, foaled in 1914. [3 entries.]

- 330 I. (£15.)—GEORGE ALFRED SMITH, East View, Oakington, Cambs., for *Oakington Ring-O-Belle*, dark chestnut; s. Antonius 10552, d. *Ring-O-Bell* 12235 by *Goldfinder* 4th 1791.

Class 52.—Hackney Fillies, foaled in 1913. [4 entries.]

- 354 I. (£16.)—MRS. FRIDERIC E. COLMAN, Nork Park, Rpsom Downs, for *Crystal of York* 23610; s. *Mathias* 6473, d. *Alta Breve* 18665 by *All Serene* 8346.
 352 II. (£10.)—ERNEST BEWLEY, Danum, Rathgar, Co. Dublin, for *Danum Flora* 23315, chestnut; s. *King's Proctor* 11102, d. *Sprightly Clara* 21041 by *Royal Dan-selt* 5783.
 353 III. (£5.)—DAVID REAL, Wharrah Percy, Malton, for *Bashful Clarice* 23458, chestnut; s. *King of the East* 10725, d. *Beverley Duchess* 18782 by *Gilemynas* 5093.

Class 53.—Hackney Fillies, foaled in 1912. [4 entries.]

- 355 I. (£15, & R. N. for Champion.)—WALTER BRIGGS, Linden Hall, Borwick, near Carnforth, for *Albin Lady Borwick* 22981, chestnut; s. *Beckingham Squire* 8070, d. *Lady Millie* 11153 by *Agility* 2789.
 357 II. (£10.)—HENRY GILDING, Gateacre, Liverpool, for *Axholme Princess* 23003, chestnut, bred by the late F. I. Batchelor, Alvechurch; s. *Admiral Crichton* 8578, d. *Ryburn Lucinda* 17896 by *Ganymede* 2076.
 358 III. (£5.)—ROBERT S. KENDALL, Ivy House, Cawood, near Selby, for *Lady Performer*, bay; s. *Copmanthorpe Performer* 8670, d. *Miss Kitty* by *Captivator* 2nd 5122.

Class 54.—Hackney Mares, with Foals at foot, over 14 hands. [3 entries.]

- 361 I. (£15, & Champion.)—H. HINRICHSSEN, Grotto House, Over Peover, Knutsford, for *Lady Beckingham* 20021, chestnut, foaled in 1907, bred by R. Surlett, Beckingham, Gainsborough; s. *Beckingham Squire* 8070, d. *Miss Helmsley* 12933 by *Dun-bury* 4724. [Foal by *Viterbo* 11611].
 359 II. (£10.)—H. C. GALLABY, Hunston Stud, Hunstanton, for *Bright Maid* 11661, dark chestnut, foaled in 1897, bred by the late Sir Walter Gilbey, Bt., Elmham Hall, Essex; s. *Ganymede* 2076, d. *Genista* 2775 by *Cadet* 1251. [Foal by *Leopard* 9783.]

Hackney Ponies.

Class 55.—Hackney Pony Stallions, foaled in or before 1912, not exceeding 14 hands. [4 entries.]

- 365 I. (£10.)—ALFRED C. KING, Braishfield Manor, Romsey, Hants, for *Harviestoun Wattis* 11463, dun, foaled in 1909, bred by J. E. Kerr, Harviestoun Castle, Dollar; s. *Sir Archie* I. 425, d. *Little Warren* 18366 by *Julius Caesar* 2nd 5860.
 362 II. (£5.)—W. W. BOURNE, Garston Manor Stud, Watford, for *Pussee* 12698, bay, foaled in 1912, bred by E. Whitworth, Lonesborough Stud, Market Weighton; s. *Melbourne Fame* 11502, d. *Melbourne Bell* 19 38 by *Successful* 8314.
 364 III. (£3.)—J. I. ELLIOTT, Booty's Farm, Cudham, Kent, for *Knockholt Little Spark* 12921, bay, foaled in 1912; s. *Tissington Gideon* 9042, d. *Shinfield Lady Horace* 21684 by *Sir Horace* 5492.
 363 R. N. & H. C.—ROBERT BRYDON, The Dene, Seaham Harbour, for *Firespark*.

¹ Champion Gold Medal given by the Hackney Horse Society for the best Stallion in Classes 44-50.

² Champion Gold Medal given by the Hackney Horse Society for the best Mare or Filly in Classes 51-54.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 56.—*Hackney Pony Mares, with Foals at foot, not exceeding 14 hands.* [1 entry.]

- 366 I. (£10).—HENRY GILDING, Cateacre, Liverpool, for Tissington Hoiden 22260, bay, foaled in 1910, bred by Sir Gilbert Grevall, Bt., C.V.O., Walton Hall, Warrington; s. Sir Horace 5442, d. Tissington Golden Bay 18391 by Goldfinder 6th 1731. [Foal by Southworth Swell 11219.]

Shetland Ponies.

Class 57.—*Shetland Pony Stallions, foaled in or before 1912, not exceeding 10½ hands.* [10 entries.]

- 368 I. (£10, & Champion.)—CHARLES DOUGLAS, Auchloch, Levenhagow, N.B., for Blackbird of Auchloch, black, foaled in 1909; s. Thor 83, d. Belinda of Auchloch 1823 by Sigurd 137.
367 II. (£5, & R. N. for Champion.)—MRS. F. GORDON COLMAN, Burgh Heath, Ep-on, for Bayardo 637, black brown, foaled in 1909, bred by Mrs. Huband, Kingsdown, Sevenoaks; s. Bessbrook of Earlsall 397, d. Brighteye 2459 by Monkshood 274.
376 III. (£3).—WILLIAM MUNGALL, Transy, Dunfermline, N.B., for Selwood of Transy 619, black, foaled in 1908; s. Seaweed 333, d. Stella 1692 by Thor 83.
375 R. N. & H. C.—R. W. R. MACKENZIE, Earlsall, Leuchars, N.B., for Dragon of Earlsall.
H. C.—371. C.—372.

Class 58.—*Shetland Pony Mares, with Foals at foot, not exceeding 10½ hands.* [4 entries.]

- 378 I. (£10).—MISS F. H. DUFFUS, Penniwells, Elstree, for Duenna of Earlsall, black brown, foaled in 1903, bred by Mrs. Rita Duffus, Penniwells; s. Borderer of Earlsall 390, d. Duchess of York 1522 by Odin 32. [Foal by Mayking of Penniwells.]
377 II. (£5).—MRS. ETNA DUFFUS, Penniwells, Elstree, for Floreat 2417, dark brown, foaled in 1906, bred by Captain the Hon. W. R. D. Forbes, Turrit, Aberdeenshire; s. Rattler 210, d. Floss 1875 by Bonaparte 168. [Foal by Bellrock.]
380 III. (£3).—WILLIAM MUNGALL, Transy, Dunfermline, N.B., for Stella 1692, black, foaled in 1909, bred by the late Marquis of Londonderry, Seaham Harbour, Co. Durham; s. Thor 83, d. Silver Queen 1197 by Oman 33. [Foal by Seaweed 333.]

Welsh Mountain Ponies.²

Class 59.—*Welsh Mountain Pony Stallions, foaled in 1912, not exceeding 11½ hands, or 1913, not exceeding 11½ hands.* [3 entries.]

- 381 I. (£10, & R. N. for Champion.)—MRS. H. D. GREENE, Grove, Craven Arms, for Grove Elfin 729, grey, foaled in 1913; s. Grove Ballistite 200, d. Grove Fairy 2531.
382 II. (£5).—MRS. H. D. GREENE, for Grove Recruit 730, brown, foaled in 1912; s. Grove Starshine 403, d. Grove Faunlight 3015 by Greyhound 80.
383 III. (£3).—THE DUCHESS OF NEWCASTLE, Hardwick Grange, Clumber Park, Workson, for Hardwick Choice 697, dark grey, foaled in 1912; s. Linnol Don, d. Clumber Janet 3rd 3738 by Hardwick Sensation 670.

Class 60.—*Welsh Mountain Pony Stallions, foaled in or before 1911, not exceeding 12 hands.* [2 entries.]

- 384 I. (£10, & Champion.)—MRS. H. D. GREENE, Grove, Craven Arms, for Bladda Shooting Star 73 grey, foaled in 1901, bred by S. M. Wilmut, The Chalet, Alveston, Glos.; s. Dyoll Starlight 4, d. Alveston Belle 579 by Cymro.

Class 61.—*Welsh Mountain Pony Fillies, foaled in 1912, not exceeding 11½ hands, or 1913, not exceeding 11½ hands.* [3 entries.]

- 387 I. (£10).—MRS. H. D. GREENE, Grove, Craven Arms, for Grove Sprite 2nd 4151, chestnut, foaled in 1912; s. Grove Ballistite 200, d. Grove Fairy 2531.
386 II. (£5).—MRS. H. D. GREENE, for Grove Searchlight, bay roan, foaled in 1913; s. Grove Arklight 413, d. Grove Gaslight 1513 by Dyoll Starlight 4.

Class 62.—*Welsh Mountain Pony Mares, foaled in or before 1911, with Foals at foot, not exceeding 12 hands.* [3 entries.]

- 389 I. (£10, & Champion.)—MRS. H. D. GREENE, Grove, Craven Arms, for Nantyrha Starlight 2207, grey, foaled in 1903, bred by H. Meuric Lloyd, Deliryn, Llanwrda; s. Dyoll Starlight 4. [Foal by Grove King Cole 2nd 565.]

¹ Champion Silver Medal given by the Shetland Pony Stud Book Society for the best Pony in Classes 57 and 58.

² £24 towards these Prizes were given by the Welsh Pony and Cob Society.

³ Silver Medal and Certificate given by the Welsh Pony and Cob Society for the best Stallion in Classes 59 and 60, entered or accepted for entry in the Welsh Pony Stud Book.

⁴ Silver Medal and Certificate given by the Welsh Pony and Cob Society for the best Mare or Filly in Classes 61 and 62, entered or accepted for entry in the Welsh Pony Stud Book.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 391 II. (£5, & R. N. for Champion.)—THE DUCHESS OF NEWCASTLE, Hardwick Grange, Clumber Park, Worksop, for *Clumber Janet* 3rd 3758, grey, foaled in 1906; s. Hardwick Sensation 670, d. *Clumber Janet* 2nd by Hardwick Briton. [Foal by Grove Gunpowder 351].
- 392 III. (£3.)—THE DUCHESS OF NEWCASTLE, for *Clumber Blacky* 3757, black, foaled in 1905; s. Linnel Don, d. Lady Jones 2nd 4351 by Linnel Don. [Foal by Dyott Starlight 4].

Hunter Riding Classes.

Class 63.—*Hunter Mares or Geldings, foaled in 1911, up to from 12 to 14 stone.* [9 entries.]

- 393 I. (£15.)—JOHN H. STOKES, Great Bowden, Market Harborough, for *Torpedo*, bay gelding.
- 400 II. (£10.)—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for *Stella*, bay mare, bred by J. Park, Grove, Retford; s. Newburgh, d. Lady Norah by Jacobin.
- 404 III. (£5.)—F. GORDON COLMAN, Burgh Heath, Epsom, for *McHaggia*, chestnut gelding; s. Great Scott, d. Cinderella 2672 by Pantomime.
- 398 E. N. & H. C.—MRS. ARTHUR SOWLER, The Warren, Fimmere, Buckingham, for *Top Hole*. H. C.—382.

Class 64.—*Hunter Mares or Geldings, foaled in 1911, up to more than 14 stone.* [7 entries.]

- 405 I. (£15.)—JOHN H. STOKES, Great Bowden, Market Harborough, for *Wattle*, bay gelding, bred by Mr. Sewell, Egleton, Oakham; s. Wild Willow.
- 407 II. (£10.)—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for *Wilton Drummer*, brown gelding, bred by Mr. Holmes, Lazenby, York; s. Drummer Kelly.
- 403 III. (£5.)—W. P. JEFFCOCK, West Common, Harpenden, for *Prairie*, dark brown gelding, bred by W. Rough, Spring Hill, Carlou; s. Crathorne, d. Greenfield by Lothario.
- 406 E. N. & H. C.—MRS. SHERRARD, The Pastures, Littleover, Derby, for *Moorcock*.

Class 65.—*Hunter Mares or Geldings, foaled in 1909 or 1910, up to from 12 to 14 stone.* [15 entries.]

- 420 I. (£15.)—JOHN H. STOKES, Great Bowden, Market Harborough, for *Walnut* 2nd, bay gelding, foaled in 1910, bred by F. B. Wilkinson, Edwinstowe, Newark; s. Blankney, d. Beech nut 3284.
- 413 III. (£5.)—B. DAVIES, Yeston, Baschurch, for *Tango*, bay gelding, foaled in 1909.
- 417 IV. (£3.)—MRS. STANTON, Snelston Hall, Ashbourne, for *Captivation* 2nd, bay gelding, foaled in 1909.

Class 66.—*Hunter Mares or Geldings, foaled in 1909 or 1910, up to more than 14 stone.* [16 entries.]

- 435 I. (£15.)—LIEUT. KENNETH STEVENSON, The Green, Great Bowden, Market Harborough, for *Syntax*, chestnut gelding, foaled in 1909, bred by Lord Middleton, Birdsall, Malton; s. Wales, d. Sympathy by Gordon.
- 430 II. (£10.)—GERALD LOUSADA, Bridge House, Higher Walton, Warrington, for *The Buck*, chestnut gelding, foaled in 1910, breeder unknown.
- 429 III. (£5.)—W. P. JEFFCOCK, West Common, Harpenden, for *Hawthorne* (Supp. 188), grey gelding, foaled in 1910, bred by F. E. Bowser, Wigtown, Boston; s. Splendour, d. Snowdrop 3rd 4434.
- 437 IV. (£3.)—C. R. TESSBYMAN, Naburn Hill, Fulford, York, for bay gelding, foaled in 1910.
- 424 V. (£2.)—C. G. BEARD, Edmondscote Manor, Leamington Spa, for *Goldfinch*, chestnut gelding, foaled in 1909.

Hacks and Riding Ponies.

Class 67.—*Mares or Geldings, foaled in or before 1911, not exceeding 12 2 hands. To be ridden by children born in or after 1903.* [5 entries.]

- 439 I. (£10.)—W. H. BONNEL, Bicester, Oxon, for *Black Diamond*, black mare, foaled in 1903, breeder unknown.
- 413 II. (£5.)—MISS SYLVIA M. S. KAYE, Great Glenn Manor, Leicestershire, for *Prince*, grey gelding.
- 411 III. (£3.)—MRS. PHILIP HUNLOKE, Bucknell Manor, Bicester, for *Taff*, grey gelding, foaled in 1903.
- 440 E. N. & H. C.—W. H. BONNER, for *Carnation*. H. C.—442.

¹ Silver Medal and Certificate given by the Welsh Pony and Cob Society for the best Mare or Filly in Classes 61 and 62, entered or accepted for entry in the Welsh Pony Stud Book.

lxiv Award of Live Stock Prizes at Nottingham, 1915.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor".]

Class 68.—*Mares or Geldings, foaled in or before 1911, over 12·2 and not exceeding 13·2 hands. To be ridden by children born in or after 1901.*
[5 entries.]

- 445 I. (£10.)—W. H. BONNER, Bicester, Oxon, for **Black Pearl**, black mare.
446 II. (£5.)—MRS. PHILIP HUNLOCKE, Bucknell Manor, Bicester, for **Rumple**, brown gelding, foaled in 1908.
448 III. (£3.)—MISS SYLVIA M. S. KATE, Great Glenn Manor, Leicestershire, for **Adamant**, brown mare.
447 R. N. & H. C.—MRS. PHILIP HUNLOCKE, for **Tecla**.
H. C.—444.

Class 69.—*Mares or Geldings, foaled in or before 1911, over 13·2 and not exceeding 15 hands.* [8 entries.]

- 456 I. (£10.)—R. H. STOCKDALE, Cottingham House, Retford, for **The Bat**, bay mare, foaled in 1910, bred by the Duke of Devonshire, Chatsworth, Chesterfield; a Newburgh.
452 II. (£5.)—MRS. PHILIP HUNLOCKE, Bucknell Manor, Bicester, for **Bennet**, brown gelding, foaled in 1911, bred by Miss Calmady Hamlyn, Bidlake, Venn, Bridesow, d. Junker.
454 III. (£3.)—O. F. MOSLEY, Leasingham, Sleaford, for **Travellers Joy**, black mare, foaled in 1910, bred by R. Earl, Rushington, Sleaford; a Travelling Lad.
453 R. N. & H. C.—O. F. MOSLEY, for **Travelling Boy**.
H. C.—440, 451.

Pit Ponies.

Class 70.—*Two Pit Ponies, not exceeding 13 hands.* [4 entries.]

- 457 I. (£10.)—THE SHIPLEY COLLIERIES, Derby, for **Merryman**, dark brown; and **Dick**, bay.
460 II. (£5.)—THE WOLLATON COLLIERIES CO., LTD., Nottingham, for brown, foaled in 1905; and grey, foaled in 1908.
459 III. (£3.)—THE SHIPLEY COLLIERIES, for **Rover**, roan, foaled in 1906; and **Ginger**, chestnut, foaled in 1906.
458 R. N. & H. C.—THE SHIPLEY COLLIERIES, for **Teddy** and **Traveller**.

Class 71. *Two Pit Ponies, over 13 and not exceeding 14 hands.*
[3 entries.]

- 462 I. (£10.)—THE SHIPLEY COLLIERIES, Derby, for **George**, dark brown, foaled in 1913; and **Dogger**, grey, foaled in 1910.
461 II. (£5.)—THE BABINGTON COAL CO., Cinder Hill, Nottingham, for **Jerry**, grey, foaled in 1907; and **Prince**, roan, foaled in 1912.
463 III. (£3.)—THE WOLLATON COLLIERIES CO., LTD., Nottingham, for chestnut, foaled in 1907; and roan, foaled in 1907.

Driving Classes.

Class A.—*Harness Mares or Geldings (Novice), not exceeding 14 hands.*
[5 entries.]

- 465 I. (£10.)—MRS. A. C. KING, Braishfield Manor, Romsey, Hants, for **Beau Brocade**, bay gelding, foaled in 1908.
468 II. (£5.)—JAMES B. WRIGHT, York House, Colne, near St. Ives, for **Glenavon Early Light** 12634, bay gelding, foaled in 1912, bred by John Wotherspoon, The Cairns, Cambuslang; a Torchure 9472, d. Fire Alarm 20667 by Fire Boy 7440.
467 III. (£3.)—MRS. JAMES PUTMAN, Haydon Hill House, Aylesbury, for **Haydon's Wonderful**, bay gelding, foaled in 1910, bred by Wainwright & Sons, Stoke-on-Trent; a Police Fire King 9832, d. Berkeley George 12489 by Berkeley Model 3983.
466 R. N. & H. C.—WILLIAM MASON, Huntington Hall, Chester, for **Tissington Reginald**.
H. C.—464.

Class B.—*Harness Mares or Geldings (Novice), over 14 and not exceeding 15 hands.* [7 entries.]

- 470 I. (£10, & Champion.)—W. W. BOURNE, Garston Manor Stud, Watford, for **Brick Starlight**, brown gelding, foaled in 1910, bred by Dr. Alex. Bowie, Colnbrook, Bucks; s. Mathias Al 10761, d. Commodity 14995 by Ganymede 2076.
471 II. (£5.)—ALEXANDER GEMMELL, Chelston, Ayr, for **Flying Scotsman**, dark brown gelding, foaled in 1911, bred by Alexander Morton, Gowanbank, Darvel; a Scotsman, d. by Goldfinger 6th 1791.

¹ Gold Challenge Cup, given by gentlemen interested in Harness Horses, for the best Animal in the Novice Classes A & C.

Award of Live Stock Prizes at Nottingham, 1915. lxx

(Unless otherwise stated, each prize animal named below was "bred by exhibitor.")

472 III. (£5.)—R. G. HEATON, Northaw House, Northaw, Herts, for *Morris Dancer* 2264, brown mare, foaled in 1911, bred by R. Scott, Thornhome, Carlisle; s. Mathias 6473, d. Golden Lily 8938 by Goldfinder 6th 1791.

473 R. N. & H. C.—J. McI. McCALL, 4 Whitehall Place, London, S.W., for *Burnhead Earl Champion*.
H. C.—473. C.—480, 475.

Class C.—*Harness Mares or Geldings (Novice), over 15 hands.*

[10 entries.]

476 I. (£10, & R. N. for Champion.)—JOHN BAIRD, Rotehell Stud, Dumfries, for *Ideal*, chestnut gelding, foaled in 1911; s. Master Mathias 10319, d. by Grandee 2nd, 6767.

479 II. (£5.)—H. HINRICHSSEN, Grotto House, Over Peover, Knatsford, for *Kirkburn Masher* 10288, dark chestnut gelding, foaled in 1906, bred by F. W. Battle, Kirkburn Manor, Driffield; s. Kirkburn Toreador 6504, d. Kirkburn Rosapex 16728 by Rosador.

484 III. (£5.)—G. RADFORD, 74 Spottland Road, Rochdale, for *Excelsior* (late Woodhatch Excelsior 11925), chestnut gelding, foaled in 1910, bred by K. P. Evans, Woodhatch, Reigate; s. Polonius 4931, d. Julia 1829 by Dagenham 4214.

483 IV. (£3.)—JOHN MAKEAGUE, Golborne Park, Newton-le-Willows, for *Lady Arthington* 23637, bay mare, foaled in 1911, bred by Charles Robinson, Arthington, near Leeds; s. Antonius 10556, d. Merry Goshua 15761 by Garton Duke of Connaught.

477 R. N. & H. C.—G. H. HALL, Carlton House, Work-up, for *Terry*.
C.—480, 481, 482.

Class D.—*Harness Mares or Geldings, not exceeding 14 hands.* [7 entries.]

486 I. (£10.)—W. W. BOURNE, Garton Manor Stud, Warford for *Bricket Fire*, brown gelding, foaled in 1910, bred by Walter Cliff, Melbourne Hall, near York; s. Royal Success 8935, d. Wortley Bell 14873 by Sir Horace 5402.

488 II. (£5.)—MRS. F. E. JUDSON, Buenos Aires, Argentine, for *Smoke* 12439, brown gelding, foaled in 1910, bred by Walter Cliff, Melbourne Hall, near York; s. Melbourne Dreadnought 11143, d. Miss Butgate 2014 by Successor 8317.

489 III. (£5.)—MRS. A. C. KING, Braishfield Manor, Romsey, Hants, for *Harviestoun Edith*, chestnut gelding, foaled in 1910, bred by J. E. Kerr, Harviestoun Castle, Dollar, N.B.; s. Mathias 6473, d. Tissington Glize 17093 by Sir Gibbie 1612.

490 R. N. & H. C.—JAMES B. WRIGHT, York House, Colne, Hants, for *Colne Clearaway*.
C.—464.

Class E.—*Harness Mares or Geldings, over 14 and not exceeding 15 hands.* [7 entries.]

491 I. (£10.)—ROBERT BLACK, Osbaldwick, York, for *Carlownie*, brown gelding, foaled in 1910, bred by Dr. McGill, Littleborough, Lancs.; s. Mathias 6473, d. by Norbury Lightning 7563.

470 II. (£5.)—W. W. BOURNE for *Bricket Starlight*. (See Class B.)

492 III. (£5.)—MRS. JAMES PUTMAN, Haydon Hill House, Aylesbury, for *Haydon's Park Carnation* 22717, brown mare, foaled in 1907, bred by William Delamy, Park House, Wimbington; s. Luth 9328, d. Park Sunshine 22733 by Lord Dundreary 7307.

Class F.—*Harness Mares or Geldings, over 15 and not exceeding 15 2 hands.* [5 entries.]

497 I. (£10, & Champion.)—PHILIP SMITH, Haddon House, Ashton-on-Mersey, for *King of the Air*, brown gelding, foaled in 1907, bred by Dr. McGill, Littleborough, Lancs.; s. Mathias 6473, d. Hollin Flashlight 18700 by Norbury Lightning 7563.

495 II. (£5.)—J. McI. McCALL, 4 Whitehall Place, London, S.W., for *Burnhead Lady Champion* 21902, bay mare, foaled in 1909, bred by A. H. Boyle, Banknock, Castletown; s. Mathias 6473, d. Champion 1957 by Lord Rosebery 1367.

494 III. (£5.)—MRS. A. C. KING, Braishfield Manor, Romsey, Hants, for *Village Pearl* 21728, black mare, foaled in 1909, bred by Robert Scott, Thornhome, Carlisle; s. Mathias 6473, d. Luth 1829 by Gentleman John 3624.

496 R. N. & H. C.—MRS. JAMES PUTMAN, Haydon Hill House, Aylesbury, for *Heaton Princess*.

Class G.—*Harness Mares or Geldings, over 15 2 hands.* [9 entries.]

499 I. (£10, & R. N. for Champion.)—PHILIP SMITH, Haddon House, Ashton-on-Mersey, for *Black Prince*, black gelding, foaled in 1908, bred by A. W. Hickling, Adbolton, Nottingham; s. Mathias 6473, d. Princess Clare 1227 by Garton Duke of Connaught 3008.

485 II. (£5.)—T. W. SIMPSON, Greenfield House, Laleham-on-Thames, for *Prince John*, chestnut gelding, foaled in 1910, bred by George Burton, Thorpe Willoughby, Selby; s. Polonius 4931, d. Lively Lady 8182 by Connaught 1453.

484 III. (£5.)—G. RADFORD, for *Excelsior*. (See Class C.)

478 R. N. & H. C.—H. HINRICHSSEN, for *Kirkburn Masher*. (See Class C.)
C.—477, 488.

¹ Gold Challenge Cup, given by gentlemen interested in Harness Horses, for the best animal in the Novice Classes A—C.

² Gold Challenge Cup given for the best animal in Classes D—G.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor,".]

JUMPING COMPETITIONS.

Class H.—Mares or Geldings. [22 entries.]

- 14 I. (£20.)—T. & H. WARD, Almsford Bank, Leeds Road, Harrogate, for **Fisherman**.
 4 (Equal prize) FRANK ALLISON, West Farm, Flaxley, Selby, for **Tempress**.
 23 I. of £1 10s. } F. V. GRANGE, Alvaston, Nantwich, for **Rufus**.
 9 IV. (£3.)—F. W. FOSTER, Etwall, Derby, for **Comet**.
 5 V. (£3.)—MRS. FOSTER, Marsh Farm, Etwall, Derby, for **Paddy**.

Class I.—Mares or Geldings. [21 entries.]

- 8 I. (£15.)—MRS. JAMES P. GLENCROSS, The Lodge, Battenhall, Worcester, for **Why Not**.
 21 II. (£10.)—J. NORBURY, Heathside, Knutsford, for **Peacock**.
 3 III. (£5.)—F. W. FOSTER, Etwall, Derby, for **Comet**.
 19 IV. (£3.)—FRANK ALLISON, West Farm, Flaxley, Selby, for **Tempress**.
 9 V. (£3.)—SINGER BROS. High House Farm, Corsley, Warminster, for **Springbok**.

Class J.—Mares or Geldings. [18 entries.]

- 5 I. (£10.)—MRS. FOSTER, Marsh Farm, Etwall, Derby, for **Paddy**.
 1 (Equal Prize) J. NORBURY, Heathside, Knutsford, for **Peacock**.
 13 I. of £5. } MRS. JAMES P. GLENCROSS, The Lodge, Battenhall, Worcester, for **Ormond Boy**.
 8 IV. (£3.)—F. W. FOSTER, Etwall, Derby, for **Sunlight**.
 4 (Equal Prize) FRANK ALLISON, West Farm, Flaxley, Selby, for **Tempress**.
 18 I. of £1 10s. } F. V. GRANGE, Alvaston, Nantwich, for **Burgo**.

Class K.—Champion Class. Mares or Geldings. [17 entries.]

- 12 I. (£20.)—T. & H. WARD, Almsford Bank, Leeds Road, Harrogate, for **Fisherman**.
 10 II. (£10.)—MRS. FOSTER, Marsh Farm, Etwall, Derby, for **Paddy**.
 11 (Equal Prize) F. W. FOSTER, Etwall, Derby, for **Comet**.
 16 I. of £4. } J. NORBURY, Heathside, Knutsford, for **Peacock**.

CATTLE.

Shorthorns.¹

Class 72.—Shorthorn Bulls, calved in 1910, 1911, or 1912. [16 entries.]

- 512 I. (£10, & Champion?) WILLIAM RICHARDSON, Laverock Bridge, Kendal, for **Basing** 36th 11650, roan, born April 12, 1910, bred by W. G. Nicholson, M.P., Basing Park, Alton; s. Baiton Socrates 10130, d. Versem 33rd by Royal Standard 7776.
 506 II. (£5.)—GEORGE HARRISON, Gainford Hall, Darlington, for **Inschfield Jealous Lad** 11212, red, born April 4, 1910, bred by George A. Bruce, Inschfield, Insch, N.B.; s. Eudymion 102163, d. Jessie 4th by Strayton Champion 82348.
 516 III. (£3.)—F. B. WILKINSON, Clarendish Lodge, Edwinstowe, Newark, for **Spency Champion** 11753, roan, born July 25, 1912, bred by T. Lancaster, Spency Croft, Alston, Cumberland; s. Nethw. Bridgetown 10561, d. Spency Maid by Hartforth Alms.
 509 IV. (£2.)—EARL MANVERS, Holme Pierrepont, Nottingham, for **Royal Sovereign** 113193, red, born April 6, 1911; s. Duke of Kingston 2nd 102088, d. Empress Millicent by Red Emperor 57026.
 501 V. (£2.)—CAPT. CLIVE BEHRENS, Swinton Grange, Malton, for **Swinton Saint** 116938, roan, born April 10, 1910; s. Chiddings-stone Seal 101787, d. Langley Phantom 3rd by Village Jester 93745.
 511 B. N. & H. C. THE DUKE OF PORTLAND, K.G., Welbeck Abbey, Worksop, for **Christian**.

Class 73.—Shorthorn Bulls, calved on or between January 1, 1913, and March 31, 1913. [13 entries.]

- 536 I. (£10, & R.N. for Champion?)—THE EARL OF ROSEBURY, K.G., Menmore, Leighton Buzzard, for **Elegance** 130112, roan, born Feb. 19; s. First Attempt 103488, d. Eliza 2nd by Royal Wind-or 43284.
 527 II. (£5.)—WALTER SPURR, Wexham, Anderby, Alford, Lincs, for **Wexham Beau** 123887, roan, born March 21; s. Royal Beau 131335, d. Wexham Lady 2nd by Pearl Clipper 103297.

¹ £150 towards these Prizes were given by the Shorthorn Society of Great Britain and Ireland.

² Champion Prize of £20 given by the Shorthorn Society of Great Britain and Ireland for the best Bull in Classes 72-76, 85 and 86. A Silver Medal is given by the Shorthorn Society to the Breeder of the Champion Bull.

Award of Live Stock Prizes at Nottingham, 1915. lxvii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 523 III. (£2.)—SIR HERBERT LEON, BT, Bletchley Park, Bletchley, for **Collynie Golden Flash** 119546, red, born March 13, bred by W. Duthie, Collynie, Tarves; a Knight of Collynie 112229, d. Collynie Golden Drop 6th by Scottish Fancy 15601.
 527 IV. (£2.)—HIS MAJESTY THE KING, The Royal Farms, Windsor, for **Royal Gold** 122611, red, born Jan. 30; a Proud Jubilant 106637, d. Golden Ferry by Winsome Lad.
 525 R. N. & H. C.—THE DUKE OF PORTLAND, K.G., for **Welbeck King**.

Class 74.—Shorthorn Bulls, calved on or between April 1, 1913, and December 31, 1913. [31 entries.]

- 532 I. (£10.)—CAPT. CLIVE BEHRENS, Swinton Grange, Malton, for **Swinton Sardonyx** 123197, red, born June 8; a Swinton Saint 110563, d. Lady Bright Jewel 3rd by Gainsford Scotchman 102301.
 531 II. (£5.)—R. J. BALSTON, Bilsington Priory, Ashford, Kent, for **Bilsington Archer** 119025, roan, born April 4; a Golden Cloud 106750, d. Diamond Rosebud by Diamond Ring 91478.
 530 III. (£3.)—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for **Morning Star** 121685, roan, born May 28, bred by Lord Brougham and Vaux, Brougham Pennith; a Sir Keith Cardigan 10709, d. Red Duchess 47th by Wells 9384.
 534 IV. (£2.)—C. E. GUNTHER, Tongswood, Hawkhurst, Kent, for **Tongswood Benedict** 123284, roan, born May 19; a Bold Broadhooks 111102, d. Strawberry Dame by Prince Benedict 86904.
 536 V. (£2.)—J. A. K. FALCONER, Culmsden Manor, Cirencester, for **Secret Sign** 122804, red, born Oct. 10; a Secret Sceptre 107014, d. Sarcasm 7th by Bapton Secretary 90763.
 545 R. N. & H. C.—LORD MIDDLETON, Birdsall, Malton, for **Birdsall Illustrious Count**.

Class 75.—Shorthorn Bulls, calved on or between January 1, 1914, and March 31, 1914. [29 entries.]

- 560 I. (£10 & S.P. £10.)—EARL MANVERS, Holme Pierrepont, Nottingham, for **Edgcote Martial Law**, roan, born March 17, bred by Edgcote Shorthorn Co. Ltd., Edgcote, Banbury; a Collynie Marshal 105071, d. Irish Welcome (vol. 57, p. 689) by Candahar.
 570 II. (£5.)—W. T. GARNE & SON, Aldsworth, Northleach, for **Aldsworth Duke**, dark roan, born March 7; a Aldsworth Magician 113863, d. Abington Belle (vol. 56, p. 638) by Village Diamond 100981.
 561 III. (£3.)—HUGH BAKER, Chedglo Manor, Malmesbury, for **Chedglo Favourite**, red, born Jan. 6; a Strathay Favourite 110326, d. Rose of Chedglo 23rd (vol. 58, p. 379) by Golden Avon 105743.
 567 IV. (£2.)—SIR HERBERT LEON, BT, Bletchley Park, Bletchley, for **Bletchley Snowstorm**, white, born Jan. 2; a Coming Storm 108242, d. Golden Heather (vol. 55, p. 870) by Ascott Wanderer 101225.
 565 V. (£2.)—FRANK BIBBY, Hardwicke Grange, Shrewsbury, for **Hardwicke Comet 4th**, red and little white, born Jan. 8; a Beaufort Nobleman 110975, d. Aldbro Augusta (vol. 54, p. 687) by Scottish Pearl 87294.
 564 R. N. & H. C.—EDGAR W. BISHOP, Fildes, Oxford, for **First Choice**.
 563 S. P. (£5.)—EARL MANVERS, for **Pierrepont Hope**, roan, born Jan. 24; a Marquis of Dorchester 112465, d. Gainsford Hope (vol. 58, p. 621) by Proud Broadhooks 109762.

Class 76.—Shorthorn Bulls, calved on or between April 1, 1914, and December 31, 1914. [37 entries.]

- 566 I. (£10.)—R. J. BALSTON, Bilsington Priory, Ashford, Kent, for **Dewlap's Royal Sovereign**, roan, born June 19; a Royal Sovereign 113193, d. Dewlap (vol. 56, p. 461) by Tenny Robin Hood 97420.
 563 II. (£5.)—J. H. DEAN & SONS, Heath House, Notten, Lincoln, for **Count Tarves**, roan, born April 25; a Count Orages 114852, d. Lady Tarves 11th (vol. 58, p. 569) by Bounty 95968.
 613 III. (£3.)—LORD MIDDLETON, Birdsall, Malton, for **Birdsall Commandant**, white, born June 20; a Birdsall Conqueror 107914, d. Duchess of Birdsall 21st by Illustrious Count 95537.
 610 IV. (£2.)—SIR JOHN HENRY MADEN, Rockcliffe House, Bacup, for **Rockcliffe Murillo**, roan, born April 2; a Lord Canning 109221, d. Martha 9th (vol. 51, p. 733) by Administrator 90610.
 609 V. (£2.)—EDWARD S. GODSELL, Salmon's House, Stroud, for **Salmon's Commander**, roan, born June 13; a Salmon's Michaelmas Gift 117397, d. Salmon's Orages 2nd (vol. 58, p. 705) by Aldbro Scottish Prince 97803.
 611 R. N. & H. C.—EARL MANVERS, Holme Pierrepont, Nottingham, for **Pierrepont Lion**.

Two Special District Prizes of (£) £10 given by the Shorthorn Society, and (II.) £5 given by the Nottinghamshire Agricultural Society, for the two best Bulls in Classes 74, 75, and 76, the property of Exhibitors residing in Nottinghamshire. A Silver Medal is also given by the Shorthorn Society to the breeder of the animal winning the £10 Prize.

lxviii *Award of Live Stock Prizes at Nottingham, 1915.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 77.—*Group Class, consisting of either three or four Shorthorn Bulls, bred by Exhibitor.* [12 entries.]

- 501, 532, 591 I. (£15.)—CAPTAIN CLIVE BEHRENS, for *Swinton Saint, Swinton Sardonyx and Scimitar*.
 511, 524, 535 II. (£10.)—THE DUKE OF PORTLAND, K.G., for *Christian, Village Pye and Welbeck King*.
 531, 562, 590 R. N. & H. C.—R. J. BALSTON, for *Bilsington Archer, Bilsington Iron Duke, and Dewlap's Royal Sovereign*.

Class 78.—*Shorthorn Cows (in-milk), calved in or before 1911.* [5 entries.]

- 629 I. (£10.)—W. M. CAZALET, Fairlawne, Tonbridge, for *Cairncosh Jilt* (vol. 57, p. 755), roan, born Jan. 28, 1907, calved Feb. 28, 1915, bred by Alexander Grassick, Cairncosh, Tullynessie, Alford; s. Prince James 88050, d. Jilt 42nd by Courner 85876.
 628 II. (£5.)—R. J. BALSTON, Bilsington Priory, Ashford, Kent, for *Cumberland Orphan* (vol. 55, p. 912), roan, born April 30, 1907, calved March 30, 1915, bred by A. J. Marshall, Bridgebank, Stranraer; s. Choir Boy 91238, d. Jubilee Belle by Scottish Victor 90608.
 630 III. (£3.)—SIR JOHN HENRY MADEN, Rockcliffe House, Baeup, for *Bertha 9th* (vol. 57, p. 733), white, born March 3, 1907, calved April 30, 1915, bred by J. & A. Milne, Sether, Cairnhill, Muchalls, Stonehaven; s. Administrator 80610, d. Bertha 6th by Count Sunshine 74304.
 627 R. N. & H. C.—R. J. BALSTON, for *Bess of Bilsington*.

Class 79.—*Shorthorn Heifers (in-milk), calved in 1912.* [6 entries.]

- 633 I. (£10.)—W. M. CAZALET, Fairlawne, Tonbridge, for *Butterfly 64th* (vol. 59, p. 1050), roan, born April 5, calved Jan. 2, 1915, bred by George Watson, Old Craig, Warrle; s. Lord Advocate 100009, d. Butterfly 56th by Sir Edon 87376.
 634 II. (£5.)—W. M. CAZALET, for *Lady Ramsden 3rd* (vol. 59, p. 748), red roan, born May 16, calved Oct. 27, 1914, bred by R. Wylie Hill, Balthayock, Perth; s. Balthayock Baronet 107758, d. Lady Ramsden 60 Proud Favourite 84420.
 637 III. (£3.)—SIR JOHN HENRY MADEN, Rockcliffe House, Baeup, for *Holker Waterloo 7th* (vol. 59, p. 692), white, born Feb. 1, calved March 18, 1915, bred by Lord Richard Cavendish, Holker Hall, Cark-in-Cartmel; s. Gunthorpe Model 108225, d. Holker Waterloo 5th by Holker Baron Oxford 6th 85497.
 632 R. N. & H. C.—HIS MAJESTY THE KING, The Royal Farms, Windsor, for *Elizabeth*.

Class 80.—*Shorthorn Heifers, calved on or between January 1, 1913, and March 31, 1913.* [6 entries.]

- 638 I. (£10, & Champion.)—HIS MAJESTY THE KING, The Royal Farms, Windsor, for *Windsor Gem* (vol. 60, p. 587), roan, born Feb. 10; s. Proud Jubilant 106637, d. Matilda by Marcus 89233.
 643 II. (£5, & R. N. for Champion.)—C. F. RAPHAEL, Porters Park, Shenley, Herts, for *Lady of the Snows* (vol. 60, p. 1023), roan, born Feb. 15; s. Snowstorm 115398, d. Avalanche's Girl by Mountain Victor 2nd 81760.
 639 III. (£3.)—R. J. BALSTON, Bilsington Priory, Ashford, Kent, for *Blythesome 35th* (vol. 60, p. 613), red, born Jan. 18; s. Bilsington Favourite 107898, d. Blythesome 36th by Choir Boy 91238.
 641 R. N. & H. C.—A. A. GATTY, Bannister Hall, Walton-le-Dale, Preston, for *Bannister Ruth*.

Class 81.—*Shorthorn Heifers, calved on or between April 1, 1913, and December 31, 1913.* [13 entries.]

- 645 I. (£10.)—W. M. CAZALET, Fairlawne, Tonbridge, for *Fairlawne Clipper Queen* (vol. 60, p. 682), light roan, born May 3; s. Willie Campbell 104406, d. Elvetnam Clipper 3rd by Lavender Royal 86380.
 656 II. (£5.)—J. H. TOPPIN, Musgrave Hall, Skelton, Penrith, for *Bright Pearl* (vol. 60, p. 1114), white, born Sept. 6, bred by John C. Toppin & Son, Musgrave Hall; s. Sanquhar Sentinel 11087, d. Bright Jewel by Bletchley Lord 90854.
 652 III. (£3.)—EARL MANVERS, Home Pierrepont, Nottingham, for *Pierrepont Rosary* (vol. 60, p. 629), roan, born Oct. 19; s. Royal Sovereign 115193, d. Rosalind by Waverley.
 646 IV. (£2.)—W. M. CAZALET, for *Nonpareil Fairy* (vol. 60, p. 590), dark roan, born April 2, bred by David Anderson, North Lorrston, Aberdeen; s. Mastodon 102999, d. Nonpareil 41st by Golden Fame 76786.
 654 R. N. & H. C.—THE EARL OF POWIS, Powis Castle, Welshpool, for *Powysland Snowdrop 2nd*.

¹ Champion Prize of £25 given by the Shorthorn Society for the best Cow or Heifer in Classes 78-83 and 87-89. A Silver Medal is given by the Shorthorn Society to the Breeder of the Champion Cow or Heifer.

Award of Live Stock Prizes at Nottingham, 1915. [ix]

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 82.—Shorthorn Heifers, calved on or between January 1, 1911, and March 31, 1914. [13 entries.]

- 602 I. (£10).—LADY GRANTLEY, Red Rice, Andover, for Frost Flower, roan, born March 17, bred by Sir J. Horlick, Bt., Cowley Manor, Cheltenham; s. Adbolton Prince 97770, d. Frost Duchess (vol. 59, p. 770) by Roving Minstrel 86553.
 661 II. (£5).—JOHN GILL, Thorn Farm, Stanton, Penrith, for Village Beauty, roan, born Jan. 5; s. Village Prince 118115, d. Princess Heather (vol. 57, p. 1283) by Prince Edgar 10059.
 657 III. (£3).—R. J. BALSTON, Bilsington Priory, Ashford, Kent, for Bilsington Lady Tarves 16th, roan, born Jan. 27; s. Edgcote Falcon 111674, d. Lady Tarves 12th (vol. 52, p. 1093) by Newton Jupiter 96290.
 658 IV. (£2).—S. F. EDGE, Gallops Homestead, Ditchling, Sussex, for Queen Augusta 2nd, roan, born Feb. 22, bred by W. H. Hicks, Upton Downs, Bursford, Oxon; s. Windsor Lad 119735, d. Queen Augusta (vol. 56, p. 646), by Burcott King 104920.
 668 R. N. & H. C.—SIR JOHN HENRY MADEN, Rockcliffe House, Bacup, for Royal Jilt.

Class 83.—Shorthorn Heifers, calved on or between April 1, 1914, and December 31, 1914. [16 entries.]

- 670 I. (£10).—SIR WALPOLE GREENWELL, Bt., Marden Park, Woldingham, Surrey, for Marden Malcolms Princess 5th, roan, born April 18; s. Pride of Sittytton 100045, d. Marden Malcolms Princess 2nd (vol. 58, p. 600), by Ascott Constellation 85184.
 670 II. (£5).—HIS MAJESTY THE KING, The Royal Farms, Windsor, for Matilda Gem, roan, born April 29; s. Silver King 117747, d. Matilda 2nd (vol. 56, p. 420) by Golden Treasure 95346.
 679 III. (£3).—W. J. HOSKEN, Loggans Mill, Hayle, Cornwall, for Hayle Gwynne 5th white, born April 5; s. Damory Premier 2nd 114487, d. Bartoliver Gwynne 3rd (vol. 57, p. 838) by Jamissary 5th 83773.
 671 IV. (£2).—CAPTAIN CLIVE BAILLENS, Swinton Grange, Malton, for Swinton Lady Waterloo 3rd, roan, born May 14; s. Pierrepont Coronation 112760, d. Derwent Waterloo 12th (vol. 57, p. 482) by Solid Gold 87418.
 673 R. N. & H. C.—W. M. CAZALET, Fairlawne, Tonbridge, for Fairlawne Clara.

Class 84.—Group Class, consisting of either three or four Shorthorn Cows or Heifers, bred by Exhibitor. [3 entries.]

- 662, 658, 670 I. (£15).—HIS MAJESTY THE KING, for Elizabeth, Windsor Gem, and Matilda Gem.
 627, 630, 657 II. (£10).—R. J. BALSTON, for Bess of Bilsington, Blythesome 39th, and Bilsington Lady Tarves 16th.
 680, 661, 675 R. N. & H. C.—JOHN GILL, for Sweet Fragrance, Village Beauty, and Village Dorothy.

Dairy Shorthorns.¹

Class 85.—Shorthorn Bulls, calved in 1913. [7 entries.]

- 667 I. (£10).—EDWARD S. GODSELL, Salmon's House, Stroud, for Salmon's Premier 12239, roan, born July 9; s. Salmon's Dairy Duke 113296, d. Puddington Pippin (vol. 57, p. 1146) by Proud Prince 109642.
 691 II. (£5).—J. M. STRICKLAND, Warren House, Brandsby, Easingwold, for Brandsby's Coming Star 5th, roan, born April 19; s. Brandsby's Aristocrat 3rd 114421, d. Brandsby's Princess (vol. 57, p. 1208) by Bapton Judge 82768.
 686 III. (£3).—C. R. W. ADEANK, Babraham Hall, Cambridge, for Lord Lee 2nd 121257, roan, born March 28, bred by G. W. Tyser, Oakfield, Mortimer; s. Darlington Dairy King 114992, d. Lady Lee 21st by Dowsby Kirklevington Duke 3rd 76515.
 689 R. N. & H. C.—SAMUEL SANDAY, Puddington Hall, Chester, for Scarlet Pimpernel, H.C.—692, C.—690.

Class 86.—Shorthorn Bulls, calved in 1914. [16 entries.]

- 693 I. (£10).—C. R. W. ADEANK, Babraham Hall, Cambridge, for Babraham Nimmo, red and white, born Jan. 9; s. Babraham Jewel 104602, d. Babraham Sympth (vol. 57, p. 424) by Prince Pericles 24th 86933.
 704 II. (£5).—SAMUEL SANDAY, Puddington Hall, near Chester, for Barrington Viking, white, born April 28; s. Oxford Record 106450, d. Barrington Belle (vol. 56, p. 1103) by Salmon's Freemason 100526.
 688 III. (£3).—ROBERT L. MOND, Coombe Bank, Sundridge, near Sevenoaks, for Discoverer, white, born April 3, bred by the late Lord Rothschild, Tring Park, Herts; s. Conjuror 91310, d. Dolphinlee Rosebud 2nd (vol. 57, p. 344) by Bulk Duke 94486.
 705 IV. (£2).—EDWARD J. TORY, Damory Court, Blandford, for Damory Protector, red, born April 6; s. Damory Milkman 111486, d. Damory Moss Rose (vol. 58, p. 901) by Baron Longney 89418.

¹ £40 towards these Prizes were given by the Dairy Shorthorn (Coates') Herd Book Association and £20 by the Shorthorn Society.

1xx *Award of Live Stock Prizes at Nottingham, 1915.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 685 **R. N. & H. C.—R. W. HOBBS & SONS, for Kelmescott Acrobat 4th.**
H.C.—697, 700. C.—694, 699, 703, 706, 708.
685 **719, 752 (Cup.)—R. W. HOBBS & SONS, for Kelmescott Acrobat 4th, Rose 43rd and Rose 53rd.**
683, 762, 763 (**R. N. for Cup.**)—**C. R. W. ADEANE, for Babraham Nimmo, Sandford Empress and Babraham Louise.**

Class 87.—Shorthorn Dairy Cows (in-milk), calved in or before 1911. [38 entries.]

- 722 **I. (£10, & Champion.)—LORD LUCAS, Wrest Park, Ampthill, for Primrose Gift** (vol. 53, p. 745) roan, born March 29, 1906, calved May 30, 1915, bred by John Graves, Heskott Hall, Wighton; s. Good Gift 91889, d. British Primrose by British Knight 76249.
722 **II. (£5.)—J. MOFFAT, Watercrock, Kendal, for Daisy Queen** (vol. 59, p. 1032), roan, born April 5, 1907, calved June 23, 1915, bred by T. Todd, The Green, Lambergh, Kendal; s. Pride of Seaberg 89637, d. Daisy 4th by Moss End Star 70119.
721 **III. (£3.)—LORD LUCAS, for Charity 23rd** (vol. 56, p. 745), light roan, born Oct. 26, 1906, calved June 19, 1915, bred by J. Mosley, Deepthwaite, Miththorpe; s. Royal Stone 72892, d. Charity 22nd by Bridegroom 3rd 68271.
719 **IV. (£2.)—R. W. HOBBS & SONS, Kelmescott, Lechlade, for Rose 43rd** (vol. 57, p. 822), red, born Sept. 17, 1907, calved May 25, 1915; s. Kelmescottonian 18th 92084, d. Rose 56th by Trojan 73777.
736 **V. (£2.)—SAMUEL SANDAY, Puddington Hall, near Chester, for Mary of Heggie End** (vol. 54, p. 659), roan, born Jan. 1, 1904, calved June 21, 1915, bred by J. Dawson, Heggie Foot, New Market, Westmorland; s. Brilliant Boy 82058, d. Mary of Heggie by Model Bloom 77288.
738 **R. N. & H. C.—REUBEN SHELTON, Grange Farm, Ruddington, Nottingham, for Silver Queen.**
H. C.—732, 734, 745. C.—716, 717, 728.

Class 88.—Shorthorn Dairy Cows (in-milk), calved in 1911. [15 entries.]

- 752 **I. (£10.)—R. W. HOBBS & SONS, Kelmescott, Lechlade, for Rose 53rd** (vol. 58, p. 660), red, born Aug. 22, calved May 23, 1915; s. Royal Proctor 110029, d. Rose 44th by Trojan 20th 90355.
760 **II. (£5.)—CAPTAIN A. S. WILLS, Thornby Hall, Northampton, for Dolphine Primrose** (vol. 59, p. 777), red roan, born Sept. 10, calved June 6, 1915, bred by T. Hunter, Dolphine Farm, Lancaster; s. Border Victor 101600, d. Primrose by Duke Fidget 78725.
747 **III. (£3.)—EDGAR W. BISHOP, Fildes, Oxford, for Spark** (vol. 58, p. 410), red and white, born Sept. 4, calved April 24, 1915; s. Bright Flame 104871, d. Frost 139th by Prince James 66223.
756 **IV. (£2.)—T. C. FULLINGER, The Brae, Dumfries, for Linda Fairy** (vol. 58, p. 523), red, born Jan. 15, calved May 28, 1915, bred by G. Gerrard, Offerton Farm, Hindon, Wores; s. Northern Star 92690, d. Lady Linda by Dragon Fly 78720.
749 **R. N. & H. C.—GERARD J. BUXTON, Tockenham Manor, Swindon, for Pretty Lass.**
H. C.—750, 751. C.—754, 755, 758.

Class 89.—Shorthorn Dairy Heifers (in-milk), calved in or after 1912. [25 entries.]

- 775 **I. (£10, & R. N. for Champion.)—J. MOFFAT, Watercrock, Kendal, for Primrose Dairymaid** (vol. 59, p. 869), roan, born Jan. 25, 1912, calved June 13, 1915; s. Dairyman Mere 106328, d. Primrose Gift by Good Gift 91889.
777 **II. (£5.)—ROBERT L. MOND, Coombe Bank, Sundridge, near Sevenoaks, for Barrington Duchess 53rd** (vol. 59, p. 973), roan, born April 20, 1912, calved May 2, 1915, bred by the late Lord Rothschild, Tring Park, Herts.; s. Foundation Stone 106324, d. Barrington Duchess 34th by Bead Sator 70469.
765 **III. (£3.)—GERARD J. BUXTON, Tockenham Manor, Swindon, for Misselthrush** (vol. 59, p. 976), white, born Aug. 12, 1912, calved May 13, 1915, bred by the late Lord Rothschild, Tring Park, Herts.; s. Ranger 109467, d. Mistletoe by Traveller 93067.
773 **IV. (£2.)—R. W. HOBBS & SONS, Kelmescott, Lechlade, for Melody 17th** (vol. 53, p. 753), roan, born May 14, 1912, calved May 14, 1915; s. Furbelaw Prince 2nd 111830, d. Melody 12th by Baron Waterloo 94220.
763 **R. N. & H. C.—C. R. W. ADEANE, for Babraham Lady Louise.**
H. C.—772, 782. C.—776, 780.

¹ Challenge Cup given through the Dairy Shorthorn (Coates's Herd Book) Association for the best group of one Bull and two Cows or Heifers in Classes 85-89. Two at least of the animals must have been bred by exhibitor.

² Champion Prize of £10 given by the Dairy Shorthorn (Coates's Herd Book) Association for the best Cow or Heifer in Classes 87-89.

Award of Live Stock Prizes at Nottingham, 1915. lxxi

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 90.—*Milk Yield Prizes, open to Shorthorn Cows and Heifers entered in Classes 78, 79, 87, 88, and 89 only.* [35 entries.]

- 791 I. (£10.)—LORD LUCAS, for *Charity 23rd*. (See Class 87.)
 792 II. (£5.)—LORD LUCAS for *Primrose Gift*. (See Class 87.)
 793 III. (£3.)—CAPTAIN A. S. WILLES, Thornby Hall, Northampton, for *Duchess of Cranford 3rd* (vol. 65, p. 1184), red, born Oct. 29, 1908, calved June 2, 1915, bred by George Taylor, Cranford, Middlesex; s. *Beau Sabreur 74044*, d. *Duchess of Armathwaite 4th* by *Golden Robin 68718*.
 H. C.—723, 726, 728, 732, 745. C.—751, 752, 754, 755.

Lincolnshire Red Shorthorns.¹

Class 91.—*Lincolnshire Red Shorthorn Bulls, calved in 1909, 1910, 1911, or 1912.* [5 entries.]

- 794 I. (£10 & Champion.²)—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for *Somercotes Polar Star 9328*, born November 1, 1911, bred by T. Freshney, Grantham, S.O. Lines; s. *Rising Star 7839*, d. by *Saltfleet Bonus 3582*.
 795 II. (£5.)—J. G. WILLIAMS, Pendley Manor, Tring, for *Croxton Ruby 33rd 8939*, born Sept. 22, 1911, bred by Frank Bourne, Croxton House, Brockley-by; s. *Scampton King of the Rubies 7122*, d. *Wootton Dairy Maid* by *Septime 2nd 492*.
 796 III. (£3.)—J. G. MOUNTAIN, Welbourne, Lincoln, for *Welbourne Mars 8008*, born March 21, 1910; s. *Horkstow Meteor 6111*, d. *Welbourne Rose Maddier* by *Ormsby Baronet 1634*.
 797 E. N. & H. C.—LORD ALGERNON PERCY, Guys Cliffe, Warwick, for *Dairy King 2nd*.

Class 92.—*Lincolnshire Red Shorthorn Bulls, calved in 1913.*
 [2 entries.] No Award.

Class 93.—*Lincolnshire Red Shorthorn Bulls, calved in 1914.* [8 entries.]

- 798 I. (£10 & R. N. for Champion.²)—AUGUSTUS P. BRANDT, Bletchingley Castle, Surrey, for *Bletchingley Genius 10487*, born Jan. 7; s. *Crimson Crescent 6240*, d. *Deeping Jessie* by *Croft Sunrise 3831*.
 800 II. (£5.)—ALFRED TURNER, Brock Hill, Oadby, Leicester, for *Rishy Nonsuch 2nd 10823*, born March 4, bred by Harry Abraham, Rishy Manor, Tealby, Lincoln; s. *Bonny Emperor 6388*, d. by *Dunsby Sentinel 1535*.
 799 III. (£3.)—JOHN EVENS, Burton, Lincoln, for *Tathwell Ruby 1106*³, born Jan. 18, bred by J. E. Davy, Tathwell, Louth; s. *Hallington Ruby 6073*, d. by *Grange Captain*.
 801 E. N. & H. C.—J. G. WILLIAMS, Pendley Manor, Tring, for *Scampton Paragon*.
 H. C.—784, 788, 789.

Class 94.—*Lincolnshire Red Shorthorn Cows (in-milk), calved in or before 1911.*
 [4 entries.]

- 802 I. (£10.)—AUGUSTUS P. BRANDT, Bletchingley Castle, Surrey, for *Fulleby Treasure 2nd* (Vol. 17, p. 284), born April 5, 1908, calved Jan. 5, 1915, bred by C. Hensman & Sons, Fulleby (Grange, Horncastle; s. *Scampton Formula 4562*, d. *Fulleby Treasure* by *Poolham Butterman 9th 1978*.
 803 II. (£5.)—JOHN EVENS, Burton, Lincoln, for *Burton Lovely* (vol. 20, p. 316), born in March, 1909, calved May 27, 1913, bred by P. Lovely, Barlings, Lincoln; s. *Morton Hero 3481*.
 804 III. (£3.)—JOHN EVENS, for *Nocton Grange Queen*, born Dec. 11, 1910, calved May 12, 1915, bred by T. Barlow, Burton; s. *Burton Baronet 6653*.

Class 95.—*Lincolnshire Red Shorthorn Cows or Heifers (in-milk), calved in or before 1912, showing the best milking properties.* [5 entries.]

- 806 I. (£10.)—JOHN EVENS, Burton, Lincoln, for *Bracebridge 218B* (vol. 16, p. 323), born Oct. 23, 1908, calved March 28, 1915, bred by F. & C. E. Scorer, Bracebridge; s. *Kirkby Imperial 4896*.
 807 II. (£5.)—JOHN EVENS, for *Burton Diamond* (vol. 19, p. 314), born Feb. 23, 1905, calved June 5, 1915, bred by Major Brown, Maidenwell, Louth; s. *Yarborough Count 316*³, d. by *Upphail 2508*.
 808 III. (£3.)—JOHN EVENS, for *Burton Fillpail 2nd* (vol. 18, p. 289), born Feb. 28, 1909, calved March 27, 1915; s. *Mr. Profit 4926*, d. *Fillpail* by *Cromwell 2nd 2477*.

¹ £80 towards these Prizes were given by the Lincolnshire Red Shorthorn Association.

² Champion Prize of £10 given by the Lincolnshire Red Shorthorn Association for the best Bull in Classes 91-93.

lxxii Award of Live Stock Prizes at Nottingham, 1915.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 96.—Lincolnshire Red Shorthorn Heifers (in-milk), calved in 1912. [5 entries.]

- 811 I. (£10.)—AUGUSTUS P. BRANDT, Bletchingley Castle, Surrey, for *Bletchingley Eggra* (vol. 19, p. 257), born March 3, calved Feb. 1, 1915, bred by George F. R. Deeping, St. Nicholas, Spalding; s. *Bletchingley Boreas* 6094, d. by *Littleworth Freeman* 5486.
 813 II. (£5.)—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for *Normanby Felicia* 2nd (vol. 20, p. 362), born Jan. 27, calved Jan. 12, 1915, bred by John Byron, Normanby-le-Wold, Lincoln; s. *Scampton Excursionist* 4089, d. by *Croft Marvel* 829.
 812 III. (£3.)—MISSSES E. M. & S. M. GRANTHAM, The Rookery, West Keal, Spilsby, for *Keal Rosemary* (vol. 19, p. 333), born May 27, calved Jan. 9, 1915, bred by Captain E. M. Grantham, West Keal; s. *Keal Rollo* 6225, d. *Keal Leonora* by *Combelem* 551.
 814 R. N. & H. C.—J. G. WILLIAMS, Pendley Manor, Tring, for *Pendley Duchess*.

Class 97.—Lincolnshire Red Shorthorn Heifers, calved in 1913. [6 entries.]

- 816 I. (£10, & Champion.)—AUGUSTUS P. BRANDT, Bletchingley Castle, Surrey, for *Toby Ruby* (vol. 20, p. 299), born April 23, bred by George J. Brown, Toby Manor, Alford; s. *Horkstowman Hercules* 7669, d. *Toby Twilight* by *Saltfleet Dragon* 4547.
 820 II. (£5.)—J. G. WILLIAMS, Pendley Manor, Tring, for *Pendley Royal Ruby*, born April 23, bred by T. H. B. Freshney, Grainthorpe House, Grainthorpe; s. *Saltfleet Ruby Champion* 8569, d. by *Saltfleet Imperialist* 4549.
 821 III. (£3.)—J. G. WILLIAMS, for *Pendley Ruby* 2nd, born July 22; s. *Saltfleet Ruby Champion* 8569, d. *Saltfleet Ruby* 20th by *Blucher of Wick* (9461).
 819 R. N. & H. C.—MISSSES E. M. & S. M. GRANTHAM, The Rookery, West Keal, Spilsby, for *Keal Unity*.
 H. C.—817, 818.

Class 98.—Lincolnshire Red Shorthorn Heifers, calved in 1914. [15 entries.]

- 823 I. (£10, & R. N. for Champion.)—ADMIRAL SIR DAVID BEATTY, Brooksby Hall, Leicester, for *Brooksby Wanton* 3rd, born March 14; s. *Scampton Majestic* 8513, d. *Pendley Wanton* 3rd (vol. 11, p. 279) by *Bonby Excursionist* 561.
 824 II. (£5.)—AUGUSTUS P. BRANDT, Bletchingley Castle, Surrey, for *Bletchingley Galha*, born Jan. 9; s. *Crimson Crescent* 8210, d. *Bletchingley Acté* by *Moreton Premier* 5522.
 836 III. (£3.)—J. G. WILLIAMS, Pendley Manor, Tring, for *Pendley Starlight* 8th, born Jan. 21; s. *Scampton Martyr* 8316, d. *Pendley Starlight* by *Kedlington Baron* 481.
 834 IV. (£2.)—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for *Sherwood Maiden*, born Jan. 24; s. *Scampton King of the Valley* 7123, d. *Sherwood No. 8* by *Dunsby Red* 3rd 6017.
 833 R. N. & H. C.—NEWTON, CHAMBERS & CO., LTD., Thorncliffe Iron Works, near Sheffield, for *Thorncliffe Bijou*.
 H. C.—829, 633, 835 C.—826, 838.

Class 99.—Milk Yield Prizes, open to Lincolnshire Red Shorthorn Cows and Heifers entered in Classes 94, 95 and 96 only. [6 entries.]

- 803 I. (£10.)—JOHN EVENS, for *Burton Lovely*. (See Class 94.)
 804 II. (£5.)—JOHN EVENS, for *Nocton Grange Queen*. (See Class 94.)
 807 III. (£3.)—JOHN EVENS, for *Burton Diamond*. (See Class 95.)
 H. C.—806.

Herefords.*

Class 100.—Hereford Bulls, calved in 1910, 1911, or 1912. [8 entries.]

- 841 I. (£10, & Champion.)—STEWART ROBINSON, Lynhales, Kington, Herefordshire, for *Gainsborough* 28383, born Feb. 3, 1910, bred by A. P. Turner, The Leen, Penbridge; s. *Lord Lieutenant* 2323, d. *Godiva* by *Clarence* 15044.
 842 II. (£5, & R. N. for Champion.)—W. B. TUDOR, Stepaide, Onibury, Salop, for *Renown* 36027, born Jan. 6, 1912, bred by G. H. Bray, Dormington; s. *Cornick* 25253, d. *Rubelle* by *Royal Rupert* 20976.

* Champion Prize of £10 given by the Lincolnshire Red Shorthorn Association for the best Cow or Heifer in d. Classes 94-98.

* £50 towards these Prizes were given by the Hereford Herd Book Society.

* Champion Prize of £10 10s. given by the Hereford Herd Book Society for the best Bull in Classes 100-105.

Award of Live Stock Prizes at Nottingham, 1915. lxxiii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 541 III. (43.)—THE HON. F. G. WYNN, Bodfean Hall, Pwllheli, for *Sentry* 29360, born Jan. 19, 1911, bred by P. W. Taylor, Birchend, Lodbury; s. *Marathon* 27000 d. *Regret* by *Volunteer* 21857.

- 542 R. N. & H. C.—T. L. WALKER, Knightwick, Worcester, for *Court Card*.
H. C.—839, 839. C.—837, 810.

Class 101.—Hereford Bulls, calved in 1913. [9 entries.]

- 543 I. (410.)—GEORGE BUTTERS, Hill House, Newton, Leominster, for *Newton Albion* 30816, born Jan. 4; s. *Baronet* 28675, d. *Gaylass* 2nd by *Savior Prince* 26465.
544 II. (45.)—CHARLES T. PULLEY, Lower Eaton, Hereford, for *Eaton Peer* 26518, born Jan. 16; s. *Bucaland Topper* 28113, d. *Ashleaf* 2nd by *Eaton Champion* 21351.
545 III. (43.)—DE F. PENNEFATHER, M.P., Kinnersley Castle, Herefordshire, for *Ring-leader* 2nd 30960, born Jan. 2; s. *Newton Edward* 28523, d. *Ringlet* by *Baronet* 29450.
546 R. N. & H. C.—HENRY J. DENT, Perton Court, Stoke Edith, Hereford, for *Perton Loyalist*.
H. C.—847. C.—848.

Class 102.—Hereford Bulls, calved in January or February, 1914. [15 entries.]

- 561 I. (410.)—ALLEN E. HUGHES, Wintercott, Leominster, for *Luckington*, born Jan. 16; s. *Panbula* 29260, d. *Lady Brenda* (vol. 43, p. 464) by *Lucas* 27613.
562 II. (45.)—HENRY MOORE, Shucknall Court, Hereford, for *Shucknall Monarch*, born Jan. 13; s. *Prince Charming* 29682, d. *Blanche* 8th (vol. 43, p. 36) by *Perry Prince*.
563 III. (43.)—SIR FREDERICK GAVLEY, BT, M.P., Berrington Hall, Leominster, for *Berrington King*, born Jan. 16; s. *Berrington Ringer* 2882, d. *Raindrop* (vol. 43, p. 382) by *Rainbow* 25688.
564 IV. (42.)—SIR J. R. G. COTTERELL, BT, Garnons, Hereford, for *Meteor*, born Feb. 20; s. *Comet* 28175, d. *Ladybank* (vol. 43, p. 415) by *Happy-go-Lucky* 25122.
565 R. N. & H. C.—LAWTON MOORE, Brampton Brian for *Brampton Hercules*.

Class 103.—Hereford Bulls, calved in 1914, on or after March 1. [8 entries.]

- 574 I. (410.)—WILLIAM GRIFFITHS, Alder End, Tarrington, for *Ringer*, born March 16; s. *Starlight* 28764, d. *Ringlet* (vol. 43, p. 362) by *Change Ringer* 23418.
575 II. (45.)—CHARLES T. PULLEY, Lower Eaton, Hereford, for *Eaton Tumbler*, born March 16; s. *Broadward* Ed-ign 28106, d. *Constance* (vol. 43, p. 493) by *Scout* 25754.
576 III. (43.)—SIR J. R. G. COTTERELL, BT, Garnons, Hereford, for *Troubadour*, born March 1; s. *Administrator* 27286, d. *Ladylove* (vol. 43, p. 415) by *Old Sort* 24926.
577 R. N. & H. C.—THE EARL OF COVENTRY, Croome Court, Worcester, for *Galway*.
C.—873.

Class 104.—Hereford Cows (in-milk), calved in or before 1911. [2 entries.]

- 578 I. (410.)—W. B. TUDGE, Stepside, Onibury, Salop, for *Arabis* (vol. 43, p. 1006), born Jan. 22, 1910, calved April 19, 1910, bred by J. D. D. Evans, Ffrwdgwrch, Brecon; s. *Linacre* 26257, d. *Arabella* by *Sulla* 25636.
579 II. (45.)—HUGH A. CHRISTY, Llangoed Castle, Llysweu, for *Lemonpied* (vol. 41, p. 819), born March 10, 1906, calved March 1, 1915, bred by W. T. Barneuy, Seltmarsh Castle, Bromyard; s. *Rougemont* 26296, d. *Lemon Sponge* by *General Buller* 20648.

Class 105.—Hereford Heifers (in-milk), calved in 1912. [7 entries.]

- 585 I. (410.)—E. SMITH & R. J. MOORE, 111 Bransford Road, Worcester, for *Miss Vera* (vol. 44, p. 361), born March 29, calved Dec. 28, 1914, bred by W. H. Davies, Claston, Dormington; s. *Nabob* 26334, d. *Fairtrade* by *Obelisk* 21657.
586 II. (45.)—H. RONALD PETTIT, Castle Weir, Kingston, Herefordshire, for *Sybil* (vol. 44, p. 729), born March 15, calved Jan. 4, 1915; s. *Bendigo* 25140, d. *Prophetess* by *Professor* 29076.
587 III. (43.)—HIS MAJESTY THE KING, The Royal Farms, Windsor, for *Ella* (vol. 44, p. 230), born Jan. 9, calved Dec. 12, 1914; s. *Broadward Gambler* 26034, d. *Elsie* by *Lord Lieutenant* 22323.

- 588 R. N. & H. C.—HENRY R. EVANS, Court of Noke, Pembroke, for *Ranunculus*.

Class 106.—Hereford Heifers, calved in 1913. [7 entries.]

- 586 I. (410, & Champion.)—FRANK BIBBY, Hardwicke Grange, Shrewsbury, for *Clive Iris* 3rd (vol. 43, p. 322), born Jan. 1; s. *Coupe d'Or* 26016, d. *Clive Iris* 2nd by *Weston Star* 25653.
589 II. (45, & R. N. for Champion.)—THE EXORS. OF J. L. HALL, Lulham, Madley, for *Miss Gordon* (vol. 44, p. 891), born Jan. 20, bred by R. O. Rees, Bradwys, Three Cocks; s. *Gamecock* 26145, d. *Countess* by *Royal Bage* 25738.
590 III. (43.)—KENNETH W. MILNES, Stanway Manor, Church Stretton, for *Stanway Gem* (vol. 40, p. 746), born Jan. 11; s. *Sir James* 24659, d. *Gemma* 4th by *Mormann*.
591 R. N. & H. C.—T. S. LUCE, Wetmore, Onibury, Salop, for *Wetmore Rosary*.
C.—882.

¹ Champion Prize of £10 10s. given by the Hereford Herd Book Society for the best Cow or Heifer in Classes 104-107.

lxxiv *Award of Live Stock Prizes at Nottingham, 1915.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 107.—Hereford Heifers, calved in 1914. [14 entries.]

- 888 I. (£10.)—ALLEN F. HUGHES, Wintercott, Leominster, for *Pictavia*, born Jan. 15; s. *Panbula* 29260, d. *Pricota* (vol. 43, p. 465) by *Lucas* 27673.
 906 II. (£5.)—D. A. THOMAS, Llanwern Park, Newport, Mon., for *Pin Money*, born Jan. 23; s. *Candiacus* 24483, d. *Phosphium* (vol. 42, p. 589) by *First Fiddle* 20366.
 893 III. (£3.)—FRANK BIBBY, Hardwicke Grange, Shrewsbury, for *Olve Lady* 6th, born Jan. 8; s. *Crusader* 26038, d. *Proud Lady* (vol. 44, p. 252) by *Proud Lad* 20941.
 904 R. N. & H. C.—KENNETH W. MILNES, for *Stanway Rarity* 2nd.
 H. C.—903, 905. C.—885.

Devons.¹

Class 108.—Devon Bulls, calved in 1910, 1911, 1912 or 1913. [3 entries.]

- 909 I. (£10, & Champion.²)—LORD POLTIMORE, Court Hall, North Molton, for *Gotton Prince* 2nd 8570, born Jan. 28, 1913, bred by John Thorn, Gotton, West Monkton, Taunton; s. *Blackguard* 622, d. *Princess* 1st C. 26 by *Pound Lord Brassy* 2nd 4651.
 908 II. (£5.)—CHARLES MORRIS, Highfield Hall, St. Albans, for *Highfield Conqueror* 8099, born Jan. 23, 1913; s. *Nadrid Conqueror* 7470, d. *Highfield Favourite* 23483 by *Pound Lord Brassy* 5th 5022.
 907 III. (£3.)—HIS MAJESTY THE KING, The Royal Farms, Windsor, for *Windsor Captain* 8325, born Feb. 26, 1913; s. *Captain Masher* 0639, d. *Highfield Famous* 3rd 22849 by *Highfield Royal* 5829.

Class 109.—Devon Bulls, calved in 1914. [7 entries.]

- 912 I. (£10, & R. N. for Champion.³)—CHARLES MORRIS, Highfield Hall, St. Albans, for *Clampit Gauge*, born Jan. 14, bred by William Brent, Clampit, Callington, Cornwall; s. *Ford Plumper* 7381, d. *Clampit Gaylass* 4th 24069 by *Lovely's Duke* 6146.
 913 II. (£5.)—CHARLES MORRIS, for *Highfield Goldfinder* 2nd 8528, born Jan. 23; s. *Holcombe Reminder* 7413, d. *Goldencup* 23148 by *Captain Harold* 4728.
 915 III. (£3.)—LORD POLTIMORE, Court Hall, North Molton, for *Town Lord*, born March 6, bred by J. W. Russell, Town Farm, Gittisham, Honiton; s. *Monster* 7200, d. *Lofty* 3rd 26180 by *Hestercombe Dairyman* 6104.
 911 R. N. & H. C.—SAMUEL KIDNER, Bickley, Milverton, for *Bickley Burgomaster*.
 H. C.—914, 916.

Class 110.—Devon Cows or Heifers (in-milk), calved in or before 1912. [6 entries.]

- 917 I. (£10, & Champion.⁴)—HIS MAJESTY THE KING, The Royal Farms, Windsor, for *Beauty* 2nd 29183, born Jan. 4, 1909, calved May 22, 1915, bred by W. Burden, Kerscott, Barnstaple; s. *Bickley Tutor* 5361, d. *Beauty* by *Buller* 4722.
 920 II. (£5, & R. N. for Champion.⁵)—WILLIAM HETWOOD, Whitefield Farm, Wiveliscombe, for *Lovelich Flirt* 24339, born June 28, 1910, calved May 8, 1915; s. *Waterloo* 6236, d. *Bearwood Flirt* 19166 by *Lord Pittsworthy* 4440.
 922 III. (£3.)—CHARLES MORRIS, Highfield Hall, St. Albans, for *Western Goodmaid* 28086, born May 11, 1911, calved April 30, 1915, bred by William Tuckett, Stockleigh Pomeroy, Crediton, Devon; s. *Cromie* 5470, d. *Goodmaid* 21763 by *Captain Harold*.
 921 R. N. & H. C.—CHARLES MORRIS, for *Highfield Charmer*.
 H. C.—918. C.—919.

Class 111.—Devon Dairy Cows or Heifers (in-milk) calved in or before 1912. [6 entries.]

- 925 I. (£10.)—JOHN H. CHICK, Wynford Eagle, Dorchester, for *Wynford Daisy* 2nd B 318 Sup., born Dec. 5, 1909, calved April 20, 1915; s. *Compton George* 8011, d. *Wynford Daisy* A 86.
 923 II. (£5.)—VISCOUNT CHETWYND, Wyndthorpe, Doncaster, for *Compton Lovely* 21878, born Feb. 5, 1904, calved June 6, 1915, bred by John Chick, Compton Valence, Dorchester; s. *Compton Jupiter* 4049, d. *Compton Lofty* 19333 by *Compton Masher*.
 928 III. (£3.)—LORAM BROTHERS, Rossumondford, Aylesbeare, Exeter, for *Orange A* 312 Sup., born in 1907, calved April 19, 1915, breeder unknown.
 927 R. N. & H. C.—LORAM BROTHERS, for *Calpurnia*.

Class 112.—Devon Heifers, calved in 1913. [3 entries.]

- 931 I. (£10.)—CAPTAIN SIR G. A. H. WILLS, Bt., M.P., Northmoor, Dulverton, for *Northmoor Prudence* 27228, born March 11; s. *Northmoor Royal Mail* 7210, d. *Cotthelstone Proof* 23511 by *Rutus* 5370.

¹ £40 towards these Prizes were given by the Devon Cattle Breeders' Society.
² Champion Prize of £10 10s. given by the Devon Cattle Breeders' Society for the best Bull in Classes 108 and 109.
³ Champion Prize of £10 10s. given by the Devon Cattle Breeders' Society for the best Cow or Heifer in Classes 110, 112 and 113.

Award of Live Stock Prizes at Nottingham, 1915. lxxv

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

981 II. (£5.)—CHARLES MORRIS, Highfield Hall, St. Albans, for **Highfield Cowslip** 26919, born March 21; s. Pound Lord Brass-y 5th 5622, d. Cowslip 23086 by Duke of Escott 4368.

982 III. (£3.)—CHARLES MORRIS, for **Highfield Countess** 4th 26918, born Jan. 4; s. Capton Bellringer 4911, d. Highfield Countess 2nd 23719 by Pound Bellringer 5017.

Class 113.—Devon Heifers, calved in 1914. [2 entries.]

982 I. (£10.)—CHARLES MORRIS, Highfield Hall, St. Albans, for **Highfield Charity** 3rd, born Jan. 26; s. Holcombe Reminder 7413, d. Highfield Charity 2nd 23236 by Pound Lord Brass-y 5th 5622.

983 II. (£5.)—EDWARD WARD, Stallenge, Bishop's Lydeard, for **Stallenge Royal Blue** 27081, born Oct. 20; s. Lark's Curly Coat 6433, d. Gentle Royal Blue 25380 by Money-maker 6385.

Class 114.—Milk Yield Prizes, open to Devon Cows and Heifers entered in Classes 110 and 111 only. [6 entries.]

923 I. (£10.)—VISCOUNT CHETWYND, for **Compton Lovely**. (See Class 111).

928 II. (£5.)—LORAM BROTHERS, for **Orange**. (See Class 111).

924 III. (£3.)—JOHN H. CHICK, Wynford Eagle, Dorchester, for **Wynford Baby** 3rd C 245 Sup., born May 1, 1911, calved April 23, 1915; s. Charmer 6642, d. Wynford Baby 1st by Overton Eclipse 4618.

South Devons.¹

Class 115.—South Devon Bulls, calved in or before 1913. [4 entries.]

936 I. (£10. & Champion.²)—ANDREW ROGERS, Brownstone, Yealmpton, for **Brownstone Laddie** 4774, born Jan. 1, 1913; s. Pastime 3337, d. Pimpernel 6364 by Marmaduke.

937 II. (£5.)—W. & H. WHITLEY, Primley Farm, Paignton, for **Primley Excelsior** 4153, born April 2, 1911; s. What I Wanted 1388, d. Coquette 6574 by Babland Boy 1783.

938 III. (£3.)—PAGE & WHITLEY, Warren Hall, Broughton, Chester, for **Primley Fossicker** 4554, born May 20, 1912, bred by W. & H. Whitley, Primley Farm, Paignton; s. What I Wanted 1388, d. Lovely 6380 by Babland Boy 1783.

Class 116.—South Devon Bulls, calved in 1914. [4 entries.]

940 I. (£10.)—BEN LUSCOMBE, Bowden, Yealmpton, for **Bowden Happy Jack**, born May 24; s. Willard Musterpiece 4652, d. Bridesmaid 7826 by Marquis 2175.

939 II. (£5.)—BEN LUSCOMBE, for **Bowden Cherry King** 2nd, born Feb. 15; s. Cherry King 4518, d. May Girl 6321 by Marquis 2175.

938 III. (£3.)—BENJAMIN BUTLAND, Leigham, Plympton, for **Leigham Pride** 5482, born Jan. 8; s. Worswell Gladiator 4257, d. Beauty 18th 10663 by Henry 7th 3178.

941 R. N. & H. C.—R. B. MEATHRELL, Caulston, Revelstoke, Plymouth, for **Caulston Laddie**.

Class 117.—South Devon Cows or Heifers (in-milk), calved in or before 1912. [10 entries.]

944 I. (£10. & R. N. for Champion.²)—BEN LUSCOMBE, Bowden, Yealmpton, for **Fidget** 9261, born Jan. 2, 1909, calved Oct. 1, 1914; s. Challenger 1823, d. Fidget 4th 6015 by Silver King 1751.

951 II. (£5.)—W. & H. WHITLEY, Primley Farm, Paignton, for **Worswell Gladys** 2nd 11390, born Jan. 12, 1912, calved Jan. 1, 1915, bred by N. S. Chaffe & Sons, Worswell Barton, Revelstoke; s. Masher's Duke 2679, d. Gladys 5408 by Juryman 1165.

942 III. (£3.)—BENJAMIN BUTLAND, Leigham, Plympton, for **Beauty** 17th 9560, born Oct. 8, 1910, calved June 20, 1915; s. Henry 7th 3178, d. Beauty 8th 6365 by Leigham Champion 1867.

943 R. N. & H. C.—PARRY MITCHELL GILL, Netton, Revelstoke, for **Netton Buttercup**.

Class 118.—South Devon Heifers, calved in 1913 or 1914. [7 entries.]

952 I. (£10.)—T. W. LUSCOMBE, Stancombe, Totnes, for **Saffron** 5th 12897, born Jan. 6, 1913; s. Rew Rempayer 3548, d. Saffron 4th 10128 by Copper King 2858.

953 II. (£5.)—F. B. MILDWAY, M.P. Plete, Ivybridge, for **Lilian's Maid**, born Jan. 28, 1914; s. Doncaster 3720, d. Lilian 10164 by Henry 8th 3176.

954 III. (£3.)—F. B. MILDWAY, M.P., for **Primrose** 2nd 12965, born July 14, 1913; s. Doncaster 3730, d. Primrose 9323 by Stanthorpe Champion 2241.

956 R. N. & H. C.—PAGE & WHITLEY, Warren Hall, Broughton, Chester, for **Warren Buttercup**.

¹ £20 towards these Prizes were given by the South Devon Herd Book Society.

² Challenge Cup given by a Member of the R.A.S.E. interested in the breeding of South Devons, for the best Animal in Classes 115-118.

lxxvi *Award of Live Stock Prizes at Nottingham, 1915.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 119.—Milk Yield Prizes, open to South Devon Cows or Heifers entered in Class 117 only. [5 entries.]

- 949 I. (£10.)—PAGE & WHITLEY, Warren Hall, Broughton, Chester, for *Pathada* Fancy 10th 9361, born May 9, 1909, calved April 16, 1915, bred by J. S. Tucker, Monmouth, Liskeard; s. Golden King 2898, d. Fancy 3rd 7421 by Rags and Tatters 1724.
 946 II. (£5.)—R. K. MEATHRELL, Coulston, Revelstoke, Plymouth, for *Watercress* 2nd 9514, born Oct. 3, 1909, calved May 3, 1915; s. Umpire 3072, d. Watercress 6656 by Why Not 2048.
 948 III. (£3.)—PAGE & WHITLEY, for *Milkmaid* 6543, born July 10, 1905, calved April 22, 1915, bred by W. S. Harris, Well Farm, Stoke Gabriel; s. Hero 2nd 1650, d. Pretty 2nd 4127 by Widland Revelstoke 945.
 H. C.—945, 950.

Longhorns.¹

Class 120.—Longhorn Bulls, calved in 1910, 1911, 1912 or 1913. [3 entries.]

- 959 I. (£10. & Champion.²)—CAPT. C. W. COTTRELL DORMER, Rousham, Steeple Aston, Oxon., for *Bridegroom* 649, brindle and white, born Jan. 15, 1912, bred by Lord Southampton, Illicote, Shipston-on-Stour; s. Stowe Brindled Duke 823, d. Pride 2nd by President 390.
 961 II. (£5.)—F. A. N. NEWDEGATE, M.P., Arbury, Nuneaton, for *Arbury King* 568, brindle and white, born Nov. 3, 1911; s. Dersingham Prince 528, d. Arden Fairy Queen by Prodigal 510.
 960 III. (£3.)—LORD GERARD, Eastwell Park, Ashford, Kent, for *Eastwell Empire* 582, plum brindle and white, born July 4, 1911; s. Eastwell Emperor 562, d. Bentley Dido by Bentley Wonder 373.

Class 121.—Longhorn Bulls, calved in 1914. [6 entries.]

- 966 I. (£10. & R.N. for Champion.³)—J. L. & A. RILEY, Putley, Ledbury, for *Putley Patriot* 693, brindle and white, born March 14; s. Putley Peer 607, d. Putley Phylis by Arden Conqueror 442.
 962 II. (£5.)—LORD GERARD, Eastwell Park, Ashford, Kent, for *Eastwell Edward* 655, dark brindle and white, born March 4; s. Eastwell Empire 582, d. Edelweiss of Eastwell by Wyolmer Secundo 401.
 964 III. (£3.)—LORD GERARD, for *Eastwell Ereno* 664, red, brindle and white, born March 6; s. Laveno 3rd 593, d. Easter of Eastwell by Melcombe Emperor 416.
 963 R. N. & H. C.—LORD GERARD for *Eastwell Engraver*.
 C. 965, 967.

Class 122.—Longhorn Cows or Heifers (in-milk), calved in or before 1912. [4 entries.]

- 971 I. (£10. & R. N. for Champion.⁴)—W. HANSON SALE, Arden Hill, Atherstone, for *Arden Lady Panza*, red and white, born April 28, 1910, calved June 29, 1915; s. Putley Gay Lad 546, d. Lady Panza by Sancho Panza 395.
 970 II. (£5.)—F. A. N. NEWDEGATE, M.P., Arbury, Nuneaton, for *Wyken Noreen*, red, and white, born June 27, 1908, calved April 15, 1915, bred by W. L. Riley, Coventry; s. Fradley Conqueror 461, d. Arden Nord 2nd by Sir Roland 425.
 968 III. (£3.)—CAPT. C. W. COTTRELL DORMER, Rousham, Steeple Aston, Oxon., for *Arden Gipsy Queen* 2nd, dark red and white, born April 25, 1909, calved April 26, 1915, bred by W. Hanson Sale, Arden Hill, Atherstone; s. Putley Gay Lad 546, d. Arden Gipsy Queen by Narley's Pretender 420.
 969 R. N. & H. C.—LORD GERARD, Eastwell Park, Ashford, Kent, for *Easter of Eastwell*.

Class 123.—Longhorn Heifers, calved in 1913 or 1914. [5 entries.]

- 974 I. (£10 & Champion.⁵)—F. A. N. NEWDEGATE, M.P., Arbury, Nuneaton, for *Arbury Damsel*, brindle and white, born Feb. 16, 1913, bred by C. Tollenmache Scott, Market Bosworth; s. Narley's Marston 538, d. Bosworth Damsel by Bosworth Baron 467.
 976 II. (£5.)—HENRY B. PARSONS, Estate Office, Eastwell Park, Ashford, Kent, for *Lady Etna of Kent* (vol. 9, p. 46), dark brindle and white, born Feb. 28, 1913, bred by the Duke of Bedford, Woburn Abbey, Beds; s. Eastwell Eagle 500, d. Etina of Eastwell by Eastwell Emperor 502.
 975 III. (£3.)—F. A. N. NEWDEGATE, M.P., for *Arbury Empress* (vol. 9, p. 48), red, brindle and white, born Jan. 10, 1913; s. Narley's Radiator 598, d. Ermine of Eastwell by Melcombe Emperor 416.
 973 R. N. & H. C.—F. A. N. NEWDEGATE, M.P., for *Arbury Bridesmaid*.

¹ £20 towards these Prizes were given by the Longhorn Cattle Society.

² Perpetual Challenge Cup given by the Longhorn Cattle Society for the best Bull or Cow in Classes 120 and 122.

³ Silver Challenge Cup given through the Longhorn Cattle Society for the best Bull or Heifer in Classes 121 and 123.

Award of Live Stock Prizes at Nottingham, 1915. lxxvii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 124.—Milk Yield Prizes, open to Longhorn Cows and Heifers entered in Class 122 only. [3 entries.]

- 971 I. (£10.)—W. HANSON SALE, for *Arden Lady Panza*. (See Class 122.)
 972 II. (£4.)—CAPTAIN C. W. COTTRELL-DORMIER, for *Arden Gipsy Queen 2nd*. (See Class 122.)
 973 III. (£3.)—F. A. N. NEWDEGATE, M.P., for *Wyken Noreen*. (See Class 122.)

Sussex.¹

Class 125.—Sussex Bulls, calved in 1910, 1911, 1912, or 1913. [5 entries.]

- 974 I. (£10. & Champion.²)—JOHN AUNGIER, Lynwick, Rudgwick, for *Lynwick Judge* 2336, born March 17, 1913; s. Drungewick K.C. 3rd 2662, d. Lynwick Rock Cherry 12772 by Lynwick Headley 2412.
 975 II. (£5.)—J. RAYNER BRITS, Greenhill Farm, Otham, Maidstone, for *Otham Odd-fellow 4th* 3292, born May 11, 1913; s. Odd-fellow 2654, d. Lilac 9006 by Lord Comp 1778.
 976 III. (£3.)—WALTER T. FREMLIN, Milgate Park, near Maidstone, for *Tutsham Nero* 2911, born Jan. 3, 1911, bred by Gerald Warde, Tutsham, West Farleigh, Kent; s. Shillinglee Bewbush 5th 2384, d. Lady Nora 5th 11592 by Tutsham Toreador 2016.
 977 E. N. & H. C.—CAMPBELL NEWINGTON, Oakover, Ticehurst, for *Oakover Toreador 5th*.
 H. C.—978.

Class 126.—Sussex Bulls, calved in 1914. [4 entries.]

- 979 I. (£10. & E. N. for Champion.²)—JAMES GROVES, Brownings Manor, Blackboys, for *Brownings Miller 3rd* 3651, born Jan. 8; s. Lock Miller 2nd 2994, d. Virgin 2nd 12390 by Tutsham Squire 2nd 2149.
 980 II. (£5.)—CAMPBELL NEWINGTON, Oakover, Ticehurst, for *Oakover Gold 11th* 3713, born March 24; s. Oakover Gold 2nd 2070, d. Oakover Twin 12994 by Sunny.
 981 III. (£3.)—W. DUNCAN KNIGHT, Rapkyns, Horsham, for *John Ridd 3693*, born June 19; s. Lynwick Buck 3011, d. Rapkyns Fire Ball 13123 by Lynwick Albert 2410.
 982 E. N. & H. C.—ALFRED PALMER, West Park, Horne, Surrey, for *Tutsham Recruit*.

Class 127.—Sussex Cows or Heifers (in-milk), calved in or before 1912. [2 entries.]

- 983 I. (£10.)—CAMPBELL NEWINGTON, Oakover, Ticehurst, for *Favourite 21st* 13061, born Feb. 12, 1910, calved Jan. 4, 1915, bred by Joseph Lucas, Foxbunt Manor, Waidron, Sussex; s. Orchardmans Squire 2475, d. Foxbunt Ellen 16995 by Tutsham Squire 2nd 2149.
 984 II. (£5.)—JAMES GROVES, Brownings Manor, Blackboys, for *Ashburnham Bloom* 11647, born Oct. 12, 1903, calved April 29, 1915, bred by the Earl of Ashburnham, Ashburnham Park, Battle; s. Limehurst Sailor 2635, d. Ashburnham Blossom 9138 by Bewbush Nobleman 3rd 1863.

Class 128.—Sussex Heifers, calved in 1913. [4 entries.]

- 985 I. (£10. & Champion.³)—JOHN AUNGIER, Lynwick, Rudgwick, for *Lynwick Knelle Flirt 3rd* 14623, born Jan. 11; s. Lynwick Prebble 2637, d. Knelle Flirt 2nd 10810 by Boxley Prince 2037.
 986 II. (£5.)—WALTER T. FREMLIN, Milgate Park, near Maidstone, for *Milgate Blossom 2nd* 14908, born Jan. 18; s. Tutsham Nero 2911, d. Brookhill May Blossom 2nd 12392 by Eygate Prince 2235.
 987 III. (£4.)—JAMES GROVES, Brownings Manor, Blackboys, for *Gaiety Girl 17th* 1539, born April 12, bred by Gerald Warde, Tutsham, West Farleigh, Kent; s. The Beau 2546, d. Gaiety Girl 5th 8648 by Tutsham Squire 17-2.
 988 E. N. & H. C.—DR. WILLIAM KELLEY-PATTERSON, Sunhill, South Godstone, Surrey, for *Tutsham Tarara 13th*.

Class 129.—Sussex Heifers, calved in 1914. [5 entries.]

- 989 I. (£10. & E. N. for Champion.⁴)—JAMES GROVES, Brownings Manor, Blackboys, for *Lady Norah 8th* 15591, born Jan. 6, bred by Gerald Warde, Tutsham, West Farleigh, Kent; s. Shillinglee Gold 2nd 2194, d. Apsley Norah 10141 by Duke of Drungewick 3rd 1904.
 990 II. (£5.)—JOHN AUNGIER, Lynwick, Rudgwick, for *Lynwick Rose 15391*, born March 16; s. Drungewick K.C. 3rd 2662, d. Lady Gondolier Prebble 11457 by Prebble Confidence 2148.

¹ £29 towards these Prizes were given by the Sussex Herd Book Society.

² Champion Silver Medal given by the Sussex Herd Book Society for the best Bull in Classes 125 and 126.

³ Champion Silver Medal given by the Sussex Herd Book Society for the best Cow or Heifer in Classes 127-129.

lxxviii Award of Live Stock Prizes at Nottingham, 1915.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor".]

993 III. (£3.)—WALTER T. FREMLIN, Milgate Park, near Maidstone, for **Milgate Blossom** 3rd 1540, born Jan. 17; s. Tutsham Nero 2011, d. Brockhill Mayblossom 2nd 1229; s. Evegate Prince 2235.

994 R. N. & H. C.—JAMES GROVES, for **Brownings Lophorn Ist.** C. 995.

Welsh.¹

Class 130.—*Welsh Bulls, calved on or after December 1, 1909, and before December 1, 1913.* [4 entries.]

999 I. (£10.)—C. H. LLOYD-EDWARDS, Nanhoron, Pwllheli, for **Nanhoron Baronet**, born Dec. 27, 1912; s. Robin Dhu 518, d. Nanhoron Necklace 1374 by Nanhoron Nimble 260.

1000 II. (£5.)—LORD PENRHYN, Penrhyn Castle, Bangor, for **Standard of Penrhyn** 624, born Aug. 24, 1912; s. Madryn Cawr 488, d. Madryn Sally 386 by Black Bear 390.

997 R. N. & H. C.—R. M. GREAVES, Wern, Portmadoc, for **Wern Mahomet**.

Class 131.—*Welsh Bulls, calved on or after December 1, 1913, and before December 1, 1914.* [4 entries.]

1001 I. (£10.)—H. O. ELLIS, Tynbendre, Bangor, for bull, born Jan. 8, 1914; s. Barenwad 456, d. Flatne 6th 1014 by Marion Prince 529.

1002 II. (£5.)—R. M. GREAVES, Wern, Portmadoc, for **Wern Master**, born Dec. 9, 1913; s. Wern Jap 418, d. Wern Backsheeh 182 by Wern Cawr 42.

1003 R. N. & H. C.—C. H. LLOYD-EDWARDS, Nanhoron, Pwllheli, for **Penilyn Bobs**. H. C.—1004.

Class 132.—*Welsh Cows or Heifers (in-milk), calved before December 1, 1912.* [2 entries.]

1005 I. (£10.)—R. M. GREAVES, Wern, Portmadoc, for **Lydestep Sarah** 1487, born Jan. 2, 1910, calved April 2, 1915, bred by T. E. Thomas, Trehal, Mathry; s. Hendre Day 256, d. Sarah 5th 907 by Gorryg Lad 85.

1006 II. (£5.)—LORD PENRHYN, Penrhyn Castle, Bangor, for **Madryn Molly** 3rd 940, born Oct. 9, 1905, calved May 17, 1915, bred by the University College of North Wales, Aber, Bangor; s. Mafeking 131, d. Madryn Molly 587.

Class 133.—*Welsh Heifers, calved on or after December 1, 1912, and before December 1, 1914.* [2 entries.]

1008 I. (£10.)—LORD PENRHYN, Penrhyn Castle, Bangor, for **Marion Nelly** 6th, born May 24, 1913, bred by R. W. Prichard, Coed Marion, near Carnarvon; s. Marion Champion 632, d. Marion Nelly 836 by Marion Prince 2nd 124.

1007 II. (£5.)—R. M. GREAVES, Wern, Portmadoc, for **Wern Nesta**, born Feb. 4, 1914; s. Wern Lion 362, d. Wern Fortress 739 by Wern Defender 45.

Red Polls.²

Class 134.—*Red Poll Bulls, calved in 1910, 1911 or 1912.* [4 entries.]

1011 I. (£10, & Champion.)—G. D. SMITH, Sirensham Court, Worcester, for **Ashlys Count** 1913, born Nov. 30, 1910, bred by the late Sir R. F. Cooper, Bt., Ashlyn, Hat. Berkhamsted; s. Ashlys Major 9192, d. Ashlys Duchess 2020 by Ashlys Duke.

1012 II. (£5, & R. N. for Champion.)—WILLIAM WOODGATE, Fairfield, Framlingham, for **Redgrave Reveller** 10475, born Jan. 12, 1912, bred by G. H. Wilson, Redgrave Diss; s. Benacre Pear 13910, d. Pretty Flower 8th 2224 by Starston Emperor 2933.

1010 III. (£3.)—THE RT. HON. SIR AILWYN E. FELLOWES, K.C.V.O., Honingham Hall, Norwich, for **Honingham Astrologie** 10363, born May 5, 1911; s. Honingham Alcester 10431, d. Chesda 10675 by Admiral Popoff 8010.

1009 R. N. & H. C.—W. E. BALSTON, Barvin, Potters Bar, for **Barvin Briton**.

Class 135.—*Red Poll Bulls, calved in 1913.* [3 entries.]

1013 I. (£10.)—THOMAS BROWN & SON, Marham Hall, Downham Market, for **Gay Davyson** 10565, born April 4, bred by the late Alfred J. Smith, Rendlesham, Suffolk; s. Davyson 265th 930, d. Rendlesham Apricot 20517 by Rendlesham Sirdar 3310.

1016 II. (£5.)—THE MARCHIONESSE OF GRAHAM, Easton Park, Wickham Market, for **Wern in the East** 10090, born Jan. 12; s. Wern 10091, d. Defeat 21138 by Hedsbury 228.

1014 III. (£3.)—THOMAS BROWN & SON, for **Marham Florine** 10621, born July 18; s. Marham Alert 10538, d. Flutter 18046 by Wentworth 2557.

¹ £10 10s. towards these Prizes were given by the Welsh Black Cattle Society.

² £30 towards these Prizes were given by the Red Poll Cattle Society.

³ Champion Prize of £5 given by the Red Poll Cattle Society for the best Bull in Classes 134-138.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 136.—Red Poll Bulls, calved in 1914. [3 entries.]

- 1016 I. (£10.)—HIS MAJESTY THE KING, Sandringham, for Letton Majolini 8th 10756, born Feb. 3, bred by Lord Cranworth, Letton Hall, Norfolk; s. Letton Majolini 5th 10347, d. Letton Meadow Dell 6th 22648 by Letton Omega 2nd Davyson 10048.
 1018 II. (£5.)—THE RT. HON. SIR ALLWYN E. FELLOWES, K.C.V.O., Honingham Hall, Norwich, for Letton Farmer 5th 10754, born Feb. 7, bred by Lord Cranworth, Letton Hall, Norfolk; s. Letton Farmer 10195, d. Letton Mercy 2nd 22162 by audit 9745.
 1017 III. (£3.)—W. E. BALSTON, Barvin, Potters Bar, for Barvin Warrior 10704, born April 14; s. Ashlyns Wentworth 10265, d. Barvin Waxlight 21330 by Robin 9160.

Class 137.—Red Poll Cows or Heifers (in-milk), calved in or before 1912. [8 entries.]

- 1025 I. (£10, & Champion.¹)—THE MARCHIONESS OF GRAHAM, Easton Park, Wickham Market, for Ashlyns Fawn 21908, born May 15, 1909, calved Jan. 20, 1915, bred by the late Sir Richard P. Cooper, Bt., Ashlyns Park, Berkhamsted; s. Ashlyns M-jor 9192, d. Ashlyns Flint 10612 by Ashlyns Frinton 7804.
 1022 II. (£5.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Molly 3rd 21914, born Oct. 8, 1908, calved April 30, 1915; s. Sudbourne Spicy 9751, d. Sudbourne Molly 2nd 10523 by Boy Bill 4201.
 1021 III. (£3.)—KENNETH M. CLARK, for Sudbourne Beurre 3rd 21909, born Jan. 9, 1908, calved April 19, 1915; s. Sudbourne Spicy 9751, d. Sudbourne Beurre 18333 by Sudbourne C.C. 6690.
 1020 R. N. & H. C.—KENNETH M. CLARK, for Sudbourne Belinda.

Class 138.—Red Poll Heifers, calved in 1913. [5 entries.]

- 1027 I. (£10, & R. N. for Champion.¹)—MAJOR D. G. ASTLEY, Little Plumstead Hall, Norwich, for Plumstead Peony 21206, born Jan. 3; s. Battleneck 10142, d. Buttercup 19657 by Musician 7393.
 1028 II. (£5.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Adela 24353, born May 22; s. Acton Crowfoot 9987, d. Sudbourne Abbess 1st 21801 by Sudbourne Sirdar 9871.
 1026 III. (£3.)—THE MARCHIONESS OF GRAHAM, Easton Park, Wickham Market, for Plumstead Duchess 24401, born April 10, bred by the Exors. of the late A. J. Smith, Rendlesham, Woodbridge; s. Davyson 285th 9230, d. Rendlesham Pear Blossom 20024 by Rendlesham Sirdar 9310.
 1031 R. N. & H. C.—A. CARLYLE SMITH, Sutton Hall, Woodbridge, for Ashmoor Medlar, H. C.—1029.

Class 139.—Red Poll Heifers, calved in 1914. [11 entries.]

- 1030 I. (£10.)—THE RT. HON. SIR ALLWYN E. FELLOWES, K.C.V.O., Honingham Hall, Norwich, for Honingham Ardentia 2nd 21651, born Feb. 12; s. Honingham Astrologie 10203, d. Ardent 14469 by The Pope 4581.
 1035 II. (£5.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Abundance 24877, born April 19; s. Acton Crowfoot 9987, d. Sudbourne Abbess 1st 21801 by Sudbourne Sirdar 9871.
 1034 III. (£3.)—W. E. BALSTON, Barvin, Potter's Bar, for Barvin Daphne, born April 29; s. Ashlyns Wentworth 10265, d. Barvin Daffodil 2154; by Honingham Adjutant 9561.
 1042 R. N. & H. C.—A. CARLYLE SMITH, Sutton Hall, Woodbridge, for Ashmoor Pearly, H. C.—1037, 1039, 1040.

Class 140.—Milk Yield Prizes, open to Red Poll Cows and Heifers entered in Class 137 only. [7 entries.]

- 1023 I. (£10.)—KENNETH M. CLARK, for Sudbourne Molly 3rd. (See Class 137.)
 1029 II. (£5.)—KENNETH M. CLARK, for Sudbourne Belinda 22631, born May 23, 1910, calved May 16, 1915; s. Sudbourne Storm 9872, d. Sudbourne Bertha 21451 by Rendlesham Lad 9629.
 1021 III. (£3.)—KENNETH M. CLARK, for Sudbourne Beurre 3rd. (See Class 137.)
 H. C.—1024, 1025.

Aberdeen Angus.²

Class 141.—Aberdeen Angus Bulls, calved on or after December 1, 1909, and before December 1, 1912. [6 entries.]

- 1045 I. (£10, & Champion.³)—J. J. CRIDLAN, Maisemore Park, Gloucester, for Everard 2nd of Maisemore 31688, born April 3, 1911; s. Rubelate of Maisemore 28706, d. Evergreen 13th 88738 by Wizard of Maisemore 21495.

¹ Champion Prize of £5 given by the Red Poll Cattle Society for the best Cow or Heifer in Classes 137-139.

² £20 toward these Prizes were given by the Aberdeen Angus Cattle Society.

³ Gold Medal given by the Aberdeen Angus Cattle Society for the best Animal in Classes 141-146.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 1043 II. (£25).—VISCOUNT ALLENDALE, Bywell Hall, Stocksfield-on-Tyne, for *Imstead* of Bywell 35686, born May 3, 1913; s. *Elmhore* 29122, d. *Marquisa* of Birley 39432 by Prince Gem of Birley 22546.
 1048 III. (£25).—CHARLES THELUSSON, Brodsworth Hall, Doncaster, for *Everon* of Maise more 30503, born Dec. 4, 1911, bred by J. J. CRIDLAN, Maise more Park, Gloucester; s. *Ertard* of Maise more 30503, d. *Evergreen* 22nd 45784 by *Idelard* of Maise more 2856.
 1046 R. N. & H. C.—GEORGE HOYERS, Skidby Manor, near Hull, for *Proud Monarch* 7th of Skidby.

Class 142.—Aberdeen Angus Bulls, calved on or after December 1, 1912, and before December 1, 1913. [8 entries.]

- 1052 I. (£10).—A. W. BAILEY HAWKINS, Stagenhoe Park, Welwyn, for *Mulben Elector* 34889, born May 1, 1913, bred by John Macpherson, Mulben, Keith; s. *Black Bouncer* 31482, d. *Elluma* 5th 49264 by *Eclipser* of Ballindalloch 25733.
 1054 II. (£5).—JAMES KENNEDY, Doonholm, Ayr, for *Matador* of Bywell 34848, born Feb. 13, 1913, bred by Viscount Alendale, Bywell Hall, Stocksfield-on-Tyne; s. *June Eric* 30733, d. *Matilda* 8th of Alder 33855 by *Mein Herr* 18601.
 1049 III. (£25).—VISCOUNT ALLENDALE, Bywell Hall, Stocksfield-on-Tyne, for *Mountain Jester* 34823, born March 17, 1913; s. *Bywell Jester* 31529, d. *Mountain Maiden* 4225 by *Exmout* of Pitpointie 15319.
 1050 E. N. & H. C.—J. J. CRIDLAN, Maise more Park, Gloucester, for *Esmoud* of Maise more.

Class 143.—Aberdeen Angus Bulls, calved on or after December 1, 1913, and before December 1, 1914. [7 entries.]

- 1059 I. (£10, & R. N. for Champion).—J. J. CRIDLAN, Maise more Park, Gloucester, for *Idyll* of Maise more 36219, born Jan. 6, 1914; s. *Peer* of Maise more 33897, d. *Tulin* of Standen 45122 by *Elector* of Benton 21811.
 1057 II. (£5).—J. H. BRIDGES, Langshott, Horley, Surrey, for *Beynon* 35537, born Dec. 24, 1913; s. *Gardafur* of Ballindalloch 31967, d. *Edwina* 4th 43354 by *Edward* 7th 1058 III. (£25).—J. H. BRIDGES, for *Fleur-de-Lis* 36106, born Jan. 29, 1914; s. *Gardafur* of Ballindalloch 31967, d. *Flower* 26th of Strichen 41321 by *Idealist* 20647.
 1060 R. N. & H. C.—J. J. CRIDLAN, for *Proud Peer* of Maise more.

Class 144.—Aberdeen Angus Cows or Heifers (in-milk), calved before December 1, 1912. [4 entries.]

- 1067 I. (£10, & R. N. for Champion).—J. E. KERR, Harviestoun Castle, Dollar, N.B., for *Fride* of Madaira 49178, born March 1, 1911, calved April 14, 1913; s. *Elector* of Ballindalloch 25518, d. *Fride* of Madrid 44038 by Prince of the Wassail 28761.
 1065 II. (£5).—J. J. CRIDLAN, Maise more Park, Gloucester, for *Tulin* of Standen 45122, born Feb. 23, 1909, calved Dec. 7, 1914, bred by Captain Cookson, Chute Standen, Wilts; s. *Elector* of Benton 21811, d. *Crocus* of Standen 37038 by *Elberton* 20435.
 1063 III. (£25).—A. W. BAILEY HAWKINS, Stagenhoe Park, Welwyn, for *Fride* 3rd of Ruthven 32385, born March 2, 1911, calved March 11, 1915, bred by A. D. Mene, Ruthven, Kingussie, Inverness-shire; s. *Earl Echo* of Ballindalloch 26706, d. *Fride* 14th of Tullynally 28761 by General of Abergeldie 12548.

Class 145.—Aberdeen Angus Heifers, calved on or after December 1, 1912, and before December 1, 1913. [7 entries.]

- 1073 I. (£10).—JAMES KENNEDY, Doonholm, Ayr, for *Evmonda* 25692, born March 16, 1913; s. *Mondello* 27183, d. *Evyrosa* 38629 by *Rosador* 15696.
 1074 II. (£5).—J. E. KERR, Harviestoun Castle, Dollar, for *Juanita Erica* 52765, born Feb. 10, 1913; s. *Elector* of Ballindalloch 25518, d. *Juanita Erica* 42502 by Prince of the Wassail 23751.
 1069 III. (£25).—J. H. BRIDGES, Langshott, Horley, Surrey, for *Flora* of Langshott 2nd 92008, born Jan. 4, 1913; s. *Eland* of Ballindalloch 24523, d. *Flower* 26th of Strichen 41321 by *Idealist* 20647.
 1068 E. N. & H. C.—VISCOUNT ALLENDALE, Bywell Hall, Stocksfield-on-Tyne, for *Plasma* of Bywell 2nd.
 H. C.—1072

Class 146.—Aberdeen Angus Heifers, calved on or after December 1, 1913, and before December 1, 1914. [12 entries.]

- 1083 I. (£10, & Champion).—J. E. KERR, Harviestoun Castle, Dollar, for *Juanita Erica* 54636, born Dec. 26, 1913; s. *Elector* of Ballindalloch 25518, d. *Juanita Erica* 42502 by Prince of the Wassail 23751.

¹ Gold Medal given by the Aberdeen Angus Cattle Society for the best Animal in Classes 141-146.

² Gold Medal given by the English Aberdeen Angus Cattle Association for the best animal of the opposite sex to that of the animal awarded the Gold Medal of the Aberdeen Angus Cattle Society in Classes 141-146.

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(Unless otherwise stated, each prize animal named below was "bred by exhibitor.")

- 1080 II. (£45).—JAMES KENNEDY, Doonholm, Ayr, for *Elavia* 54617, born Jan. 25, 1914; s. Mondello 27193, d. Eloquente 35111 by Jim 17306.
 1079 III. (£25).—A. W. BAILEY HAWKINS, Stagenhoe Park, Welwyn, for *Pandora* of Stagenhoe 54530, born Jan. 4, 1914; s. Hayston Black Enamel 3275, d. Burn Pandora 49326 by Kaptan 27027.
 1082 E. N. & H. C.—J. F. KERR, for *Ethica* of Harviestoun, H. C.—1075.

Galloways.¹

Class 147.—Galloway Bulls, calved on or after December 1, 1909, and before December 1, 1913. [4 entries.]

- 1087 I. (£10, & R. N. for Champion.²)—DAVID BROWN, Stepford, Holywood, Dumfries, for *Jovial* of Blackcombe 11710, born April 24, 1912, bred by Hugh Fraser, Arkland, Dalbeattie; s. Optimist 11093, d. Lady Nancy 3rd 17483 by Campfollower of Stepford.
 1089 II. (£5).—ROBERT GRAHAM, Auchengassel, Twynholm, N.B., for *Mint Master* of Castlemilk 11773, born Feb. 1, 1912, bred by Sir R. W. Buchanan-Jardine, Bt., Castlemilk, Lockerbie; s. Barron 10033, d. Meg 5th of Castlemilk 19457 by Campfollower of Glenlair 8887.

Class 148.—Galloway Bulls, calved on or after December 1, 1913, and before December 1, 1914. [4 entries.]

- 1092 I. (£10).—FRANCIS N. M. GOURLAY, Milton, Tynron, Thornhill, N.B., for *Cossack* of Stepford 12272, born Jan. 15, 1914, bred by W. M. Neilson, Queenshill, Ringford; s. Hero of Blackcombe 11067, d. Jansone of Queenshill 22423 by Keynote 10579.
 1091 II. (£5).—JOHN CUNNINGHAM, Tarbrooch, Dalbeattie, for *Sapphire* 12398, born May 1, 1914, bred by Thomas Buzgar & Sons, Chapelton, Dalbeattie; s. Pure Gem 11836, d. Lizzie 2nd of Chapelton 13464 by Lord William of Durhamhill 7708.
 1093 III. (£25).—ROBERT GRAHAM, Auchengassel, Twynholm, for *Quality* of Auchengassel 12398, born April 4, 1914; s. Legacy of Auchengassel 10902, d. Nymph of Auchengassel 22592 by War Boy 10176.

1094 E. N. & H. C.—ROBERT GRAHAM, for *Quicksilver* of Auchengassel.

Class 149.—Galloway Cows or Heifers (in-milk), calved before December 1, 1912. [5 entries.]

- 1096 I. (£10, & Champion.²)—SIR ROBERT W. BUCHANAN-JARDINE, Bt., Castlemilk, Lockerbie, for *Alema* of Castlemilk 19452, born March 12, 1907, calved June 14, 1915; s. Campfollower of Glenlair 8887, d. Alice 2nd of Castlemilk 19352 by The Pathfinder 3rd 5691.
 1099 II. (£5).—ROBERT GRAHAM, Auchengassel, Twynholm, for *Marion* 3rd of Glentriplock 18324, born Jan. 13, 1905, calved Dec. 21, 1914, bred by Peter Anderson, Glentriplock; s. Freeland 8073, d. Marion 2nd of Glentriplock 17011 by Balmoral 6386.
 1095 III. (£25).—DAVID BROWN, Stepford, Holywood, Dumfries, for *Constance* of Stepford 21214, born Feb. 19, 1908, calved May 23, 1915; s. Cairn of Stepford 888, d. Evelyn of Stepford 18327 by Excelsior 7702.

Class 150.—Galloway Heifers, calved on or after December 1, 1912, and before December 1, 1913. [7 entries.]

- 1100 I. (£10).—SIR ROBERT W. BUCHANAN-JARDINE, Bt., Castlemilk, Lockerbie, for *Claire* 2nd of Castlemilk 23487, born March 2, 1913; s. Baron 10033, d. Claire of Castlemilk 21832 by Border Union 10228.
 1101 II. (£5).—JOHN CUNNINGHAM, Tarbrooch, Dalbeattie, for *Maggie* Lauder 12th of Tarbrooch 23325, born May 5, 1913; s. Challenger 10837, d. Maggie Lauder of Tarbrooch 17406 by Macdonald 4th of Tarbrooch 8841.
 1106 III. (£25).—FRANCIS N. M. GOURLAY, Milton, Tynron, Thornhill, for *Freda* 3rd of Craigneston 23424, born May 3, 1913; s. Keystone 9689, d. Favourite of Craigneston 10625 by Pioneer of Kilquhanity 8470.
 1102 E. N. & H. C.—FRANCIS N. M. GOURLAY, for *Flavia* 3rd of Craigneston.

Class 151.—Galloway Heifers, calved on or after December 1, 1913, and before December 1, 1914. [4 entries.]

- 1108 I. (£10).—ROBERT GRAHAM, Auchengassel, Twynholm, for *Lavender* 11th of Heasel 23014, born Jan. 22, 1914, bred by R. D. Bane Cunningham, Heasel, New Galloway; s. Mint Master 11773, d. Lavender 2nd of Heasel by Signet of Castlemilk 8891.
 1107 II. (£5).—SIR ROBERT W. BUCHANAN-JARDINE, Bt., Castlemilk, Lockerbie, for *Maisie* 2nd of Thorniehill 23096, born March 2, 1914, bred by the Misses Gilchrist, Thorniehill, Balmacellan; s. Kenneth of Kilcarran 11870, d. Nora 2nd of Thorniehill 19298 by Earl of Stanquhar 5459.

¹ £20 towards these Prizes were given by the Galloway Cattle Society of Great Britain and Ireland.

² Champion Prize of £5 given by the Galloway Cattle Society of Great Britain and Ireland for the best animal in Classes 147 to 151.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 1110 **III. (£3).**—JAMES KNOTT, Close House, Wylam-on-Tyne, for **Darling of Morington** 23238, born Dec. 18, 1913, bred by T. Hope Bell, Morington; s. Favourite of Dunnabe 11923, d. Darling of Mossknowe 22386 by Gordon of Blackcombe 10775.
- 1108 **R. N. & H. C.**—FRANCIS N. M. GOURLAY, for **Lady Stanley** 31st of Chapelton.

Ayrshires.¹

Class 152.—*Ayrshire Bulls, calved in or before 1914.* [3 entries.]

- 1111 **I. (£10).**—JAMES HOWIE, Hillhouse, Kilmarnock, for **Barboigh Douglas** 10973, white and brown spots, born March 1, 1913, bred by Alex. Watson, Barboigh, Mauchline; s. Barboigh Dan 9229, d. Barboigh Winifred 2nd 19135 by Barboigh Royal Osborne.
- 1113 **II. (£5).**—JAMES HOWIE, for **Merry Stamp** 13308, white with dark spots, born in April, 1914, bred by Thomas Scott, Netherhall, Lanark; s. Netherhall Sunrise 10741, d. Netherhall Blossom 9th 24599 by Howie's Conductor 6456.

Class 153a.—*Ayrshire Cows or Heifers (in-milk).* [12 entries.]

- 1114 **I. (£10).**—ALEX. CROSS, Knockdon, Maybole, N.B., for **Knockdon Loudoun Lassie** 7th 32064, brown and white, born March 14, 1912, calved June 15, 1915; s. Carston St. Thomas 7304, d. Knockdon Loudoun Lassie 4th 17315 by Jewler of Knockdon 4736.
- 1124 **II. (£5).**—WILLIAM KERR, Old Graitney, Greta, Carlisle, for **Old Graitney Sonie** 18th 33482, red and white, born in June, 1911, calved June 20, 1915, bred by W. & J. Kerr, Old Graitney; s. Old Graitney Silver Heel 8409, d. Old Graitney Sonie 6th 19545 by Sir John of Old Graitney 4035.
- 1116 **III. (£3).**—ALEX. CROSS, for **Meikle Kilmary Perfection** 34590, brown and white, born May 4, 1910, calved May 13, 1915, bred by Mrs. McAllister, Meikle, Kilmary, Rothesay; s. Ardyne King Edward 10112, d. Meikle Kilmary Shepherdess 3rd 27158 by Flora's Chief of Adamhill 3955.
- 1117 **R. N. & H. C.**—LIEUT.-COL. G. J. FERGOUSON-BUCHANAN, Auchentorlie, Bowling for **Ardyne Brown Bess** 3rd, H. C.—1130.

Class 153b.—*Ayrshire Cows or Heifers (in-calf).*

- 1121 **I. (£10).**—JAMES HOWIE, Hillhouse, Kilmarnock, for **Auchenelough Stately Maid** 41807, white, brown spots, born March 21, 1913, bred by William Bone, Auchenelough, Gilston; s. Bruce Rising Star 8187, d. Auchenelough Susie 26378 by Lessenscock Marshal Oyama 5811.
- 1122 **II. (£5).**—JAMES HOWIE, for **West Newton Snowdrop** 3rd 34495, white, born in May, 1910, bred by James Lowrie, West Newton, Strathaven; s. Balgredan Bright Boy 6944, d. West Newton Snowdrop 2nd.
- 1125 **III. (£3).**—THE DUKE OF PORTLAND, K.G., Welbeck Abbey, Worksop, for **Whitelegs** 5th 27177, white and brown spots, born March 8, 1910, calved Jan. 12, 1915, bred by Robert Wallace, Auchenbraun, Ayrshire; s. Lessenscock Good Girl 730, d. Auchenbraun Whitelegs 2nd 16834 by Good Hope of Auchenbraun 4350.
- 1123 **R. N. & H. C.**—WILLIAM KERR, for **Old Graitney Sonie** 17th, H. C.—1118, C.—1115.

Class 154.—*Milk Yield Prizes, open to Ayrshire Cows and Heifers entered in Class 153a only.* [6 entries.]

- 1119 **I. (£10).**—WILLIAM GIBSON, Moorside Farm, Worston, Clitheroe, for **Auchenelough Kate** 2nd 26370, white and brown, born March 13, 1910, calved May 19, 1915, bred by William Bone, Auchenelough, Gilston; s. Auchenelough General 7592, d. Auchenelough Kate by Surprise of Gateside 4276.

British Holstein-Friesians.²

The letters F.R.S. after the number of an animal indicates that such animal is registered in the *Friesch Rundvee Stamboek* (Friesian Cattle Herd Book) *Zwartkops* (Black and White) Section.

The letters H., F.R.S., refer to the *Hulpstamboek* (Auxiliary Herd Book) *Zwartkops* (Black and White) Section of the *Friesch Rundvee Stamboek*.

Unless otherwise stated, the numbers refer to the *British Holstein-Friesian Herd Book*.

Class 155.—*Holstein-Friesian Bulls, calved in or before 1912.*

[2 entries.]

- 1127 **I. (£10).**—RALPH WILLIAMSON, Rhyl Broughton Home Farm, Wrexham, for **Gilston Touchstone** 1335, born April 18, 1911, bred by A. S. Bowliby, Gilston Park, Rudlow; s. Gilston Prince 221, d. Gilston Evelyn 1298.
- 1129 **II. (£5).**—SIR PETER C. WALKER, BT, Osmaston Manor, Derby, for **Osmaston Pioneer** 1877, born Oct. 19, 1912; s. Terling Mikado 3338, d. Terling Jane 3rd 4130 by Jupiter 2nd 731.

¹ £20 towards these Prizes were given by the Ayrshire Cattle Herd Book Society.

² £35 towards these Prizes and Silver Medals for the First Prize winners in each Class were given by the British Holstein-Friesian Cattle Society.

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(Unless otherwise stated, each prize animal named below was "bred by exhibitor.")

Class 156.—British Holstein-Friesian Bulls, calved in 1913. [6 entries.]

- 1131 I. (£10).—MISS A. GUEST, Inwood, Templecombe, Somerset, for **Inwood** (Imported) **Ideal** 4027, born Nov. 5, bred by J. N. Wassenaar, Jelsum, Holland; s. Nico 4869 F.R.S. d. Eley 5th 1739 F.R.S. by Jan 1265 F.R.S.
 1132 II. (£5).—P. W. D. ROBINSON, Roos Hall, Bercles, for **Becoles** (Imported) **Lodewijk** 3501, born Dec. 23, bred by F. Wassenaar, Leeuwarden, Holland; s. Nico 4869 F.R.S. d. Lena 10th 1853 F.R.S. by Jan 3265 F.R.S.
 1133 III. (£3).—HENRY A. WARD, North Crawley, Newport Pagnell, for **Hedges Nero** 2817, born April 27, bred by A. & J. Brown, Hedges Farm, St. Albans; s. Hedges Highlander 1943, d. Hedges Nora 1854 by Colton Brand.
 1134 E. N. & H. C.—ARTHUR S. BOWLBY, Gilston Park, Harlow, for **Gilston Champion**.

Class 157.—British Holstein-Friesian Bulls, calved in 1914. [10 entries.]

- 1134 I. (£10).—HUGH BROWN, Colton Mains, Dunfermline, for **Colton** (Imported) **Vic Bram** 3765, born Jan. 14, bred by J. A. Falsma, Wirdum, Holland; s. Victor 5107 F.R.S. d. Jeltje 2nd 1942 F.R.S. by Brouwer 5539 F.R.S.
 1142 II. (£5).—SIR PETER C. WALKER, BT, Osmaston Manor, Derby, for **Osmaston** (Imported) **Frita** 4293, born Feb. 26, bred by B. B. Sienema, Grouw, Holland; s. Anema 4th 5478 F.R.S. d. Aaltje 5th 13457 F.R.S. by Frits 1372 H F.R.S.
 1143 III. (£3).—MRS. TOWNSHEND, Gorstage Hall, Sandway, for **Gorstage** (Imported) **Misty's Victor**, born March 2, bred by N. S. Kingma, Baxum, Holland; s. Victor 4107 F.R.S. d. Misty 5th 16918 F.R.S. by Friso 3771 F.R.S.
 1136 IV. (£2).—LIEFT. COL. W. E. HARRISON, Wychnor Park, Burton-on-Trent, for **Wychnor Duke** 4765, born Feb. 17; s. Lavenham Duke 1801 d. Lavenham Dora 9652.
 1138 E. N. & H. C.—MRS. H. MULLINER, Clifton Court, near Rugby, for **Rugby John French**.

Class 158.—British Holstein-Friesian Cows (in-milk), calved in or before 1911. [17 entries.]

- 1151 I. (£10).—MISS A. GURST, Inwood, Templecombe, Somerset, for **Terling Musk** 4th 12094, born Oct. 2, 1908, calved May 14, 1915, bred by Lord Royleigh, Terling, Essex; s. Xerxes, d. Musk.
 1153 II. (£5).—ADAM SMITH, Lochlands, Larbert, for **Lochlands May** 10008, born June 30, 1911, calved May 31, 1915; s. Lochlands President 413, d. Lochlands Millie 2448.
 1149 III. (£3).—HUGH BROWN, Colton Mains, Dunfermline, for **Colton True Type** 864, born in Nov., 1908, calved June 17, 1915; s. Hedges Tatton King 321, d. Colton Cherry.
 1146 IV. (£2).—JOHN BROMET, Golf Links Farm, Tadcaster, for **Tredegar Dairymaid** 4738, born in 1908, calved May 10, 1915, bred by John T. Chambers, Wyldingtree, North Weald.
 H. C.—1155. C.—1144, 1147.

Class 159.—British Holstein-Friesian Heifers (in-milk), calved in 1912 or 1913. [6 entries.]

- 1161 I. (£10).—WILLIAM G. PLAYER, Ednaston Manor, Derby, for **Osmaston Minnie** 11032, born Jan. 28, 1912, calved June 1, 1915, bred by Sir Peter C. Walker, BT, Osmaston Manor, Derby; s. Leacock Premier 393, d. Leacock Bliss 2362.
 1165 II. (£5).—ADAM SMITH, Lochlands, Larbert, for **Lochlands Hetty** 10006, born Jan. 2, 1912, calved May 28, 1915; s. Lochlands President 413, d. Lochlands Hilda 2434.
 1161 III. (£3).—FERRY FORD, Molescroft Grange, Beverley, for **Rough Spots** 15844, born March 13, 1913, calved May 14, 1915; s. Garton Parker 1291, d. Stanfield Spot 3866.
 H. C.—1163. C.—1162.

Class 160.—British Holstein-Friesian Heifers, calved in 1914. [12 entries.]

- 1171 I. (£10).—RICHARD FORD, Garton, Driffield, for **Garton Dorrit** 17780, born March 16; s. Stanfield Victor 693, d. Stanfield Dorrit 3742 by Hertford.
 1167 II. (£5).—JOHN BROMET, Golf Links Farm, Tadcaster, for **Eske Sunshine** 2nd 15662, born and white, born March 1, bred by the Exors. of J. Humble, High Eske, Beverley; s. Routh Commander 567, d. Eske Sunshine 908.
 1169 III. (£3).—HUGH BROWN, Colton Mains, Dunfermline, for **Colton Blackbird** 3rd 47250, born Feb. 11; s. Colton Sultan 2525, d. Colton Blackbird 452 by Colton Puritan 86.
 1168 E. N. & H. C.—JOHN BROMET, for **Golf Charlotte**.
 H. C.—1170, 1172. C.—1173, 1174.

Class 161.—Milk Yield Prizes, open to British Holstein-Friesian Cows and Heifers entered in Classes 158 and 159 only. [11 entries.]

- 1148 I. (£10, & Special).—HUGH BROWN, Colton Mains, Dunfermline, for **Colton Sympathy** 408, born Feb. 28, 1910, calved June 9, 1915; s. Colton Puritan 95, d. Colton Nerissa 580 by Hedges Tatton King 321.

¹ Special Prize of £5 given through the British Holstein-Friesian Cattle Society to the winner of the First Prize in Class 161.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 1149 II. (25.)—HUGH BROWN, for *Colton True Type*. (See Class 158.)
 1157 III. (23.)—E. R. & H. WILLIAMS, Brook Farm, Chaddesden, Derby, for *Chaddesden Darkie* 309, age unknown, calved June 9, 1915, bred by the late John Brown, Harden, Hereford.
 H. C.—1144, 1145, 1146, 1147, 1152.

Jerseys.¹

N.B.—In the Jersey Classes, the number inserted within brackets after the name of an animal indicates the number of such animal in the *Iceland Herd Book*. A number without brackets indicates that the animal is registered in the *English Jersey Herd Book*.

Class 182.—Jersey Bulls, calved in 1910, 1911, or 1912.

[8 entries.]

- 1182 I. (210, & Champion.²)—W. DUNCAN KNIGHT, Rapkyns, Horsham, for *La Maitretrie Lad* 11393, whole colour, born Dec. 4, 1911, bred by Napper & Francis, St. Martin's, Jersey; s. *Welcome Lad* 2nd, 10824, d. *Avranche Daisy* (13796) P.S.C. by *Huesey's Lad*.
 1183 II. (23, & E. N. for Champion.³)—G. MURRAY SMITH, Gumley Hall, Market Harborough, for *Mermaid's Sultan* 10652, whole colour, born May 20, 1911, bred by P. J. Priant, St. Peter's, Jersey; s. *Noble's Jolly Sultan* 10622, d. *Mermaid* (10211) P.S.C.
 1181 III. (23.)—W. M. JACKSON, Legatts, near Potters Bar, (or *Mabel's Star* 11412, whole colour, born April 14, 1912, bred by W. J. Labey, Grouville, Jersey; s. *Fontaine's Star* 10851, d. *Mabel* 85th by *Fairy Lad* 8907.
 1180 E. N. & H. C.—DR. H. CORNER, Brook House, Southgate, for *Golden Leda's Stockwell*.
 H. C.—1179, 1186.

Class 183.—Jersey Bulls, calved in 1913. [4 entries.]

- 1187 I. (210.)—JOSEPH CARSON, Crystalbrook, Theydon Bois, for *David Garrick*, whole colour, born Feb. 23, bred by Mrs. S. A. Valpy, Grouville, Jersey; s. *Seli Acting* 11147, d. *Rowena Garrick* (10236) by *Beauvoirs King* 9488.
 1189 II. (25.)—MRS. F. E. EVELYN, Wotton House, Dorking, for *Red Cloud*, broken colour, born Feb. 21, bred by J. H. Smith-Barry, Stowell Park, Pewsey; s. *Redruth* 10407, d. *Post Obil* (vol. 18 p. 388) by *Gay Boy* 7510.
 1188 III. (23.)—MISS ENDERBY, Beckington, Bath, for *Myrtles Hero*, whole colour, born April 18, bred by W. Syrett, Junr., St. Owens, Jersey; s. *Royal Guide* (1041), d. *Myrtles*.
 1190 E. N. & H. C.—THE DUKE OF PORTLAND, K.G., for *Count*.

Class 184.—Jersey Bulls, calved in 1914. [14 entries.]

- 1194 I. (210.)—MRS. F. E. EVELYN, Wotton House, Dorking, for *Wotton Pegasus*, broken colour, born May 26; s. *Ottalies Chancellor* 11451, d. *Wotton Parquetette* by *Illustrious* 10269.
 1190 II. (25.)—ALEXANDER MILLER-HALLETT, Goddington, Chelsfield, for *Goddington Chance* 2nd, whole colour, born Jan. 17; s. *Golden Chances Noble* 10256, d. *Cream* 2nd (vol. 24, p. 376) by *Sir Picton* 9425.
 1193 III. (23.)—MISS ENDERBY, Beckington, Bath, for *Beckington Fortune's Noble*, whole colour, born April 8; s. *Noble Lad* 10722, d. *Favour's Fortune* (vol. 22, p. 303) by *Black Bob* 9149.
 1198 IV. (22.)—W. DUNCAN KNIGHT, Rapkyns, Horsham, for *Rapkyn's Viceroy*, whole colour, born May 7; s. *La Maitretrie Lad* 11393, d. *Coronation Belle* (vol. 25, p. 303) by *Jolly Dick* 9645.
 1191 E. N. & H. C.—JOSEPH CARSON, Crystalbrook, Theydon Bois, for *Honest Acting*.
 H. C.—1197.

Class 185.—Jersey Cows (in-milk), calved in or before 1911.

[27 entries.]

- 1227 I. (210, & Champion.⁴)—CHARLES THELLUSSON, Brodsworth Hall, Doncaster, for *Arcadia* (vol. 22, p. 241), fawn, born Aug. 28, 1909, calved March 11, 1915, bred by Lady de Rothschild, Aston Clinton, Tring; s. *Stormer* 9431, d. *Amberoid* 3rd by *General Warde* 8891.
 1216 II. (25, & E. N. for Champion.⁵)—G. MURRAY SMITH, Gumley Hall, Market Harborough, for *Laxton Lady* (vol. 23, p. 335), whole colour, born Dec. 5, 1906, calved Feb. 1, 1915, bred by C. Benest, Trinity, Jersey; s. *Laxton* 9307, d. *Lady Warwick* (10738) P.S.C. by *Picton* 3rd 6996.

¹ £20 towards these Prizes were given by the English Jersey Cattle Society.

² Champion Prize of £25 given by the English Jersey Cattle Society for the best Bull in Classes 162-164.

³ Champion Prize of £25 given by the English Jersey Cattle Society for the best Cow or Heifer in Classes 165, 166, 167, and 169.

Award of Live Stock Prizes at Nottingham, 1915. lxxxv

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 1221 III. (£3.)—J. H. SMITH-BARRY, Stowell Park, Pewsey, for *Marionette* (vol. 18, p. 359), grey fawn, born Oct. 3, 1904, calved April 26, 1915; s. Gay Boy 7510, d. Marigold by *Sportive* 7037.
 1222 IV. (£2.)—W. M. JACKSON, Leggatts, near Potters Bar, for *White Pansy*, broken colour, born in June, 1911, calved March 19, 1915, bred by J. B. Badier, St. Martin's, Jersey; s. Noble's Jolly Sultan 10022, d. Moutonne (15001) by *Granny's Hero*.
 1219 V. (£2.)—J. H. SMITH-BARRY, for *Lightsome* (vol. 25, p. 379), fawn, born May 1, 1911, calved June 21, 1915; s. May Duke 10354, d. Lucinda by *Fleur de Lys* 9583.
 1211 R. N. & H. C.—W. M. JACKSON, for *Pretty Viêtress*.
 1224, 1185, 1256 (S.P.)—THE HON. MRS. TENNANT, St. Anne's Manor, Sutton, Loughborough, for *Lady Typist*, *Waterloo*, and *Billet Doux*.
 H. C.—1206, 1210. C.—1215, 1222, 1224, 1228, 1251.

Class 168.—Jersey Heifers (in-milk), calved in 1912. [11 entries.]

- 1233 I. (£10.)—MRS. F. E. EVELYN, Wotton House, Dorking, for *Wotton Vinolia*, whole colour, born Jan. 31, calved June 19, 1915; s. *Illustrious* 10289, d. *Wotton Viola* (vol. 24, p. 446) by *Cynthia's Prince* 9882.
 1235 II. (£5.)—ALEXANDER MILLER-HALLETT, Goddington, Chelsfield, Kent, for *Indispensable 2nd*, whole colour, born Jan. 11, calved March 31, 1915, bred by J. W. Journeaux, Jersey; s. *Golden Fern's Noble* 10826, d. *Indispensable* (14275) by *Vandyke* (3886).
 1232 III. (£3.)—MRS. F. E. EVELYN, for *Wotton Parquette*, whole colour, born Feb. 1, calved June 4, 1915; s. *Illustrious* 10289, d. *Sweet Daisy* (vol. 22, p. 430) by *Handy Man*.
 1234 R. N. & H. C.—ALEXANDER MILLER-HALLETT, for *Goddington Foxglove 8th*.
 H. C.—1237, 1241.

Class 167.—Jersey Heifers (in-milk), calved in 1913. [14 entries.]

- 1232 I. (£10.)—W. M. JACKSON, Leggatts, near Potters Bar, for *Jolly Tidy*, broken colour, born Feb. 20, calved May 18, 1915, bred by G. F. Fauvel, St. Martin's, Jersey; s. *Cyclone 3rd* 11274, d. *Tidy 11th* (16557) by *Mourier's Sultan* 10014.
 1244 II. (£5.)—JOSEPH CARSON, Crystalbrook, Theydon Bois, for *Euxesis*, born Jan. 22, calved May 10, 1915, bred by J. C. Gibant, Groveville, Jersey; s. *Self Acting* 11147, d. *Pretty Rosette 2nd* (15053) by *Candia's Lad* 10348.
 1213 III. (£3.)—JOSEPH CARSON, for *Bel Air Queen 5th*, whole colour, born May 1, calved June 17, 1915, bred by T. Bertram, Groveville, Jersey; s. *Self Acting* 11147, d. *Bel Air Queen* (10176).
 1254 R. N. & H. C.—A. MILLER-HALLETT, for *Goddington Flower 4th*.
 H. C.—1253, 1255. C.—1210, 1247.

Class 168.—Jersey Cows or Heifers (in-milk), bred by Exhibitor, and sired in Great Britain or Ireland. [12 entries.]

- 1224 I. (£10.)—J. H. SMITH-BARRY, for *Marionette*. (See Class 165.)
 1233 II. (£5.)—MRS. F. E. EVELYN, for *Wotton Vinolia*. (See Class 165.)
 1219 III. (£3.)—J. H. SMITH-BARRY, for *Lightsome*. (See Class 165.)
 1215 R. N. & H. C.—G. MURRAY SMITH, for *Flavia*.
 H. C.—1234, 1255.

Class 169.—Jersey Heifers, calved in 1914. [9 entries.]

- 1233 I. (£10.)—MRS. F. E. EVELYN, Wotton House, Dorking, for *Wotton Egg*, whole colour, born April 14; s. *Yeovil Lad* 10833, d. *Wotton Easter Egg* (vol. 23, p. 444) by *Mourier's Sultan* 10014.
 1260 II. (£5.)—JOSEPH CARSON, Crystalbrook, Theydon Bois, for *Fontaine's Rosebud*, whole colour, born June 10, bred by Dr. H. Corner, Brook House, Southgate; s. *Fontaine's Hope* (4979), d. *Juanita's Rosebud* (vol. 25, p. 365) by *Aidan's March Hare*.
 1254 III. (£3.)—W. M. JACKSON, Leggatts, near Potters Bar, for *Chancellor's Lass*, whole fawn, born Jan. 14; s. *Chancellor* 10558, d. *Postage 23rd* (vol. 28, p. 434) by *Jack of all Work* 9643.
 1265 R. N. & H. C.—A. MILLER-HALLETT, for *Goddington Petune 2nd*.
 H. C.—1261.

Class 170.—Milk Yield Prizes, open to Jersey Cows and Heifers entered in Classes 165, 166, and 167 only. [22 entries.]

- 1222 I. (£10.)—J. H. SMITH-BARRY, Stowell Park, Pewsey, for *Nerine* (vol. 22, p. 377), fawn, born April 28, 1908, calved Jan. 28, 1915; s. *Fleur de Lys* 9683, d. *Nellie Beresford* by *Golden Lad* 5331.

* Special Prize of £10 10s. given by the Royal Jersey Agricultural Society for the best Cow and two of her progeny, in Classes 162-167, the progeny to be bred by exhibitor.

lxxxvi; Award of Live Stock Prices at Nottingham, 1915.

(Unless otherwise stated, each prize animal named below was "bred by exhibitor.")

- 1224 II. (£5.)—THE HON. MRS. TENNANT, St. Anne's Manor, Sutton, Loughborough, for Lady Typist (vol. 24, p. 347), whole colour, born April 22, 1910, calved April 8, 1915, bred by John Pount, Trinity, Jersey; s. Iron Duke 9948, d. Laxton Lady by Laxton.
1221 III. (£4.)—J. H. SMITH-BARRY, for Marionette. (See Class 153.)
H. C.—1205, 1206, 1208, 1209, 1212, 1216, 1217, 1218, 1223. C.—1225, 1229, 1231, 1242.

Guernseys.¹

N.B.—Unless otherwise stated, the numbers refer to the English Guernsey Herd Book.

Class 171.—Guernsey Bulls, calved in 1910, 1911, or 1912. [8 entries.]

- 1266 I. (£10 and Champion?)—MRS. R. C. BAINBRIDGE, Elfordleigh, Plympton, Devon, for Raymond's Joe 2382, orange and white, born April 30, 1910, bred by James Le Page, Neuve Maison, Castel, Guernsey; s. Raymond of the Preel 5th 1911 P.S., R.G.A.S., d. Bon Espoir 9th 4545 P.S., R.G.A.S.
1272 II. (£5.)—J. F. REMNANT, M.P., The Grange, Twyford, Berks., for Kingfisher 2215, fawn and white, born May 19, 1910, bred by Sir H. F. Lennard, Br. Wickham Court, West Wickham; s. King Cup 1881, d. Water Nymph 2nd 7607 by Wickham Lord 165.
1271 III. (£3.)—H. FITZWALTER PLUMPTRE, Goodnestone Park, Canterbury, for Royal Sequel 2211, fawn and white, born Feb. 19, 1910, bred by D. N. Gaudin, Les Salines, St. Sampson's, Guernsey; s. Galaxy's Sequel 1509 P.S., R.G.A.S., d. Loulou of the Salines 3513 P.S., R.G.A.S.
1267 B. N. & H. C.—JOHN CAREY FORSTER, Clatford Mills, Andover, for Clatford Jewel, H. C.—1268, 1272. C.—1269.

Class 172.—Guernsey Bulls, calved in 1913. [5 entries.]

- 1276 I. (£10.)—H. FITZWALTER PLUMPTRE, Goodnestone Park, Canterbury, for Lord Royal 4th 2739, fawn and white, born Aug. 18; s. Lord Royal 3rd 2185, d. Golden Muriel 8670 by Golden Casket 2138.
1278 II. (£5.)—FRANK PRATT-BARLOW, Lynchmere House, Haslemere, for Lynchmere Lord Roberts 2nd 2784, fawn and white, born July 5; s. Robert's Boy's Sequel 2nd, d. Clatford Meadow Sweet 3003 by Chieftain 82 P.S., R.G.A.S.
1275 III. (£3.)—A. W. BAILEY HAWKINS, Stagenhoe Park, Welwyn, Herts., for Stagenhoe Reliance 2853, red and white, born March 22; s. Merton Reliance 2338, d. Daisy of the Preel 10th 7606 by Lord Seymour 1851.
1274 B. N. & H. C.—W. H. N. GOSCHEN, Durrington House, Harlow, for Rose King.

Class 173.—Guernsey Bulls, calved in 1914. [13 entries.]

- 1281 I. (£10, & R.N. for Champion?)—SIR EVERARD HAMBO, K.C.V.O., Milton Abbey, Blandford, for Milton Cherub 1st 3008, fawn and white, born May 7; s. Hayes Cherub 3rd 2365, d. Lynchmere Queen of the May 3rd 6080 by Lord Mar 2nd 2327.
1285 II. (£5.)—ALBS. TEROVSK, Herrard Park, Basingstoke, for Herrard Governor 2nd 2871, fawn and white, born March 17; s. Governor of the Chene 1267 P.S., R.G.A.S., d. Nora 8th of les Bourds 1233 by Golden Hero of L'Etiennerie 1807 P.S., R.G.A.S.
1289 III. (£3.)—FRANK PRATT-BARLOW, Lynchmere House, Haslemere, for Polly's Ideal of Maison de Bas, fawn and white, born June 6, bred by Mrs. E. M. Le Page, Marnes-la-Mare, St. Andrew's, Guernsey; s. Prince of la Croix 3213 P.S., R.G.A.S., d. Polly 9th of the Beaulieu 11555 P.S., R.G.A.S., by Justine's Sequel of the Preel 21st P.S., R.G.A.S.
1286 IV. (£2.)—MRS. W. HOWARD PALMER, Murrell Hill, Bracknell, Berks., for Murrell Fido 3009, fawn, born March 16; s. Hayes Fido 2nd 2460, d. Ashburnham Slavey 823 by Noble of la Huette 2344.
1283 B. N. & H. C.—A. W. BAILEY HAWKINS, for Stagenhoe Charmant 2nd, H. C.—1279, 1284. C.—1282.

Class 174.—Guernsey Cows (in-milk), calved in or before 1910. [9 entries.]

- 1300 I. (£10, & Champion?)—J. F. REMNANT, M.P., The Grange, Twyford, Berks., for Treacle 3rd 8280, fawn and white, born Jan. 11, 1909, calved May 25, 1915, bred by J. H. Borrer, Auguston Grange, Dursley, Glos.; s. King Cup 1850, d. Sweet-some 2nd 6614 by Milford Easter Gift 1238.
1298 II. (£5.)—FRANK PRATT-BARLOW, Lynchmere House, Haslemere, for Rosy of Les Mauxmarquis 3173, light red, born March 16, 1903, calved April 30, 1915, bred by A. Robert, Les Mauxmarquis, St. Andrews, Guernsey.

¹ £40 towards these Prizes were given by the English Guernsey Cattle Society.

² Champion Prize of £5 given by the English Guernsey Cattle Society for the best Bull in Classes 171-173.

³ Champion Prize of £5 given by the English Guernsey Cattle Society for the best Cow or Heifer in Classes 174-177.

Award of Live Stock Prizes at Nottingham, 1915. lxxxvii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 122 **III. (43.)**—W. H. N. GOSCHEN, Durrington House, Harlow, for **Nellie 2nd of the Echelle** 8168, fawn and white, born July 22, 1908, calved June 13, 1915, bred by F. K. Pelley, Echelle, St. Andrews, Guernsey; s. *Loyal of the Tertie* 4th 1917 P.S., R.G.A.S., d. *Nelly of the Echelle* 3457 P.S., R.G.A.S.
 123 **B. N. & H. C.**—A. W. BAILEY HAWKINS, for **Stagenhoe Rose of Gold**, H. C.—1295, 1297. C.—1299.

Class 175.—Guernsey Cows or Heifers (in-milk), calved in 1911 or 1912. [9 entries.]

- 126 **I. (410.)**—A. W. BAILEY HAWKINS, Stagenhoe Park, Welwyn, Herts., for **Rowanberry 8th** 9057, fawn and white, born Feb. 23, 1912, calved May 10, 1915, bred by Mrs. J. E. Ellis, Wren Head, Sealby, Yorks.; s. *Broomflower* 4th 2231, d. *Rowanberry* 4678 by *Wallo 2nd* 1175.
 127 **II. (45.)**—J. F. REMNANT, M.P., The Grange, Twyford, Berks., for **Romana 49th** 8659, fawn and white, born Feb. 15, 1912, calved April 6, 1915, bred by the late Spencer Trower, Stanstead Bury, Ware; s. *Lennard 2nd* 2162, d. *Romana 26th* 6081 by *Reliance of La Lande* 1615.
 128 **III. (43.)**—W. H. N. GOSCHEN, Durrington House, Harlow, for **Early Morn 8th** 9890, fawn and white, born May 15, 1912, calved June 8, 1915, bred by Miss Bailhe-Hamilton, Burley Lodge, Rhinowood; s. *Bonnie's Pride 2nd* 2122, d. *Early Morn 5th* 591 by *His Highness 2nd* 1377.
 129 **R. N. & H. C.**—MRS. R. C. BAINBRIDGE, Elfordleigh, Plympton, for **Elfordleigh Lady Jab**, H. C.—1302, 1306, 1308. C.—1307.

Class 176.—Guernsey Heifers, calved in 1913. [11 entries.]

- 131 **I. (410.)**—MRS. JERVOISE, Herriard Park, Basingstoke, for **Rose 3rd of School Lane Farm** 10394, light red and white, born March 18, bred by G. H. Froome, School Lane Farm, St. Martin's, Guernsey; s. *Hector of les Messuriers* 2733 P.S., R.G.A.S., d. *Rose of School Lane Farm* 486 P.S., R.G.A.S.
 132 **II. (45.)**—JOHN CAREY FORSTER, Clatford Mills, Andover, for **Clatford Sonrisa 904**, light red and white, born March 15, bred by Major de la Cordanaine, Haviland Hall, St. Peter Port, Guernsey; s. *Raymond of la Croix* 2692 P.S., R.G.A.S., d. *Primrose of the Hall* 4746 P.S., R.G.A.S.
 133 **III. (43.)**—A. W. BAILEY HAWKINS, Stagenhoe Park, Welwyn, Herts., for **Stagenhoe Daisy 1st** 10350, fawn and white, born Feb. 6; s. *Merton Reliance* 2338, d. *Kingsmoor Daisy 17th* 8154 by *Kingsmoor Governor* 1952.
 134 **R. N. & H. C.**—H. FITZWALTER PLUMPTRE, for **Muriel 56th**, H. C.—1320. C.—1311.

Class 177.—Guernsey Heifers, calved in 1914. [9 entries.]

- 126 **I. (410. & R. N. for Champion.)**—MRS. JERVOISE, Herriard Park, Basingstoke, for **Herriard Godolphin Phyllis** 10752, born June 16; s. *Trengwanton Corporal* 2528, d. *Godolphin Phyllis 5th* 8679 by *Golden Hero of the Vauxbelets* 1929.
 127 **II. (45.)**—MRS. W. HOWARD PALMER, Murrell Hill, Birtford, Berks., for **Murrell Citron** 10851, fawn, born Sept. 2; s. *Haye-Fido 2nd* 2469, d. *Citron 22nd* 8060 by *Champion of the Bourg* 1848.
 128 **III. (43.)**—MRS. JERVOISE, for **Trewidden Golden Cherry 3rd** 11057, fawn and white, born May 28, bred by T. B. Bolitho, Trewidden, Penzance; s. *Roue d'or les Reines* 2306, d. *Trewidden Golden Cherry* 9257 by *Conchelo Duke* 2009.
 129 **R. N. & H. C.**—A. W. BAILEY HAWKINS, for **Stagenhoe Broom 2nd**, H. C.—1321, 1322. C.—1320.

Class 178.—Milk Yield Prizes, open to Guernsey Cows and Heifers entered in Classes 174 and 175 only. [8 entries.]

- 130 **I. (410.)**—J. F. REMNANT, M.P., for **Treacle 3rd**. (See Class 171.)
 129 **II. (45.)**—J. F. REMNANT, M.P., The Grange, Twyford, Berks., for **Donnington Jane** 8034, fawn and white, born Nov. 11, 1908, calved April 17, 1915, bred by A. C. Harris, Donnington Manor, Chichester; s. *Lord Howe of Warren Wood* 1362, d. *Donnington Beauty* 5418 by *Apse Frederic* 1075.
 129 **III. (43.)**—MRS. R. C. BAINBRIDGE, Elfordleigh, Plympton, Devon, for **Elfordleigh Lady Jab** 8838, lemon, fawn and white, born Aug. 31, 1911, calved March 20, 1915; s. *Squire's Lad* 2217, d. *Countess 4th of the Nonette* 7213 by *Nelson's Billy* 1498 P.S., R.G.A.S.
 H. C.—1293, 1306, 1307.

1 Champion Prize of £5 given by the English-Guernsey Cattle Society for the best Cow or Heifer in Classes 174-177.

lxxxviii Award of Live Stock Prizes at Nottingham, 1915.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor"]

Kerries.¹

N.B.—In the Kerry Classes, the number inserted within brackets after the name of an animal indicates the number of such animal in the Irish Kerry Herd Book. A number without brackets indicates that the animal is registered in the English Kerry Herd Book.

Class 179.—Kerry Bulls, calved in 1910, 1911, 1912, or 1913.

[7 entries.]

- 1336 I. (£10, & Champion.²)—P. TAAFFE, Foxborough, Cloonyquin, Elphin, Ireland, for Shamrock Brian Sheen (774), born March 24, 1913; s. Shamrock Brian Bording (729), d. Shamrock Sheen 50th (3763) by Gort Lord Edward (632).
 1335 II. (£5.)—P. TAAFFE, for Kilmorna Lord 13th, born March 15, 1912, bred by G. Mahony, Kilmorna, Co. Kerry; s. Kilmorna Lord 6th (688), d. Kilmorna Waterville 6th (3552) by Kilmorna Duke 9th (624).
 1333 III. (£3.)—R. TAIT ROBERTSON, The Hutch, Malahide, Co. Dublin, for **La Mancha My Mistake**, Ear Mark 1366, born May 27, 1912.
 1334 R. N. & H. C. & Champion.³—EDMUND ROYDS, M.P., Holy Cross, Caythorpe, Grantham, for **Minley Nigger** (vol. 14, p. 7), born May 5, 1913, bred by L. Currie, Minley Manor, Farnborough; s. La Mancha Paddy 258, d. Dav Rosebud 1370 by Dav Daniel 360.
 H. C.—1331.

Class 180.—Kerry Cows or Heifers (in-milk), calved in or before 1912.

[3 entries.]

- 1337 I. (£10, & R. N. for Champion.²)—CAPT. J. L. AMES, Thistleyhaugh, Longhorsley, for **Walton Fame** 1490, born in 1903, calved April 24, 1915, breeder unknown.
 1338 II. (£5.)—R. TAIT ROBERTSON, The Hutch, Malahide, Co. Dublin, for **La Mancha Mag**, Ear Mark 1478, born in Feb. 1912, calved April 1, 1915, breeder unknown.
 1339 III. (£3.) EDMUND ROYDS, M.P., Holy Cross, Caythorpe, Grantham, for **Caythorpe Calfy** 2nd 1348, born April 2, 1909, calved March 28, 1915; s. Caythorpe Gort Major 203, d. Caythorpe Calfy 729 F.S.

Class 181.—Kerry Heifers, calved in 1913 or 1914. [4 entries.]

- 1341 I. (£10.)—R. TAIT ROBERTSON, The Hutch, Malahide, Co. Dublin, for **La Mancha Mummie**, born April 4, 1914; s. Castlelough Duke (745), d. Walton Can Can (955).
 1340 II. (£5.)—CAPT. J. L. AMES, Thistleyhaugh, Longhorsley, for **Conquet Cornflower** (vol. 14, p. 6), born April 13, 1913; s. Barkerfield 242, d. Walton Jael 2nd 1331 by Walton Bover 176.
 1343 III. (£3.)—P. TAAFFE, Foxborough, Cloonyquin, Elphin, Ireland, for **Castlelough Fuschia** 2nd (3898), born April 10, 1913, bred by J. Hilliard, Lake Hotel, Killarney; s. Castlelough Duke (745), d. Castlelough Fuschia (3656) by Kilbreen (660).
 1342 R. N. & H. C. EDMUND ROYDS, M.P., for **Caythorpe Mistress**.

Class 182.—Milk Yield Prizes, open to Kerry Cows and Heifers entered in Class 180 only. [2 entries.]

- 1337 I. (£10.)—CAPT. J. L. AMES, for **Walton Fame**. (See Class 180.)

Dexters.⁴

N.B.—In the Dexter Classes, the number inserted within brackets after the name of an animal indicates the number of such animal in the Irish Dexter Herd Book. A number without brackets indicates that the animal is registered in the English Dexter Herd Book.

Class 183.—Dexter Bulls, calved in 1910, 1911, 1912, or 1913. [3 entries.]

- 1345 I. (£10, & Champion.⁵)—ALFRED C. KING, Braishfield Manor, Romsey, Hants, for **Home Rule** (588), born April 15, 1911, bred by John Neill, Killarney, Co. Kerry; s. Plantol (561), d. Duv Abigail (1965).
 1346 II. (£5.)—R. TAIT ROBERTSON, The Hutch, Malahide, Co. Dublin, for **La Mancha Joe**, born Aug. 10, 1913, bred by Dr. D. C. Gausson, Dummurry, Co. Antrim.

£15 towards these Prizes were given by the English Kerry and Dexter Cattle Society.

¹ Challenge Cup given by the English Kerry and Dexter Cattle Society for the best Animal in Classes 179-181.

² Challenge Trophy given by the English Kerry and Dexter Cattle Society for the best Kerry Bull in Class 179 whose dam has won a prize or commendation in the Milk or Butter Tests at either of the Shows of the R.A.S.E. Bath and West, Royal Counties, Truro, and London Dairy Show.

³ £15 towards these Prizes were given by the English Kerry and Dexter Cattle Society.

⁴ Challenge Cup given by the English Kerry and Dexter Cattle Society for the best Animal in Classes 183-185.

Award of Live Stock Prizes at Nottingham, 1915. LXXXIX

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 1344 III. (£3.)—LT. COL. THE HON. A. B. BATHURST, M.P., Polebrook, Haver, Kent, for **Brokenhurst Lad** 540, born May 20, 1913, bred by Mrs. Morant, Brokenhurst Park, Hants; s. Gort Not 2nd 173, d. Shannon Lass 1721 F.S.

Class 184.—Dexter Cows or Heifers (in-milk), calved in or before 1912.
[8 entries.]

- 1350 I. (£10, & R. N. for Champion.)¹—H. MARTIN GIBBS, Barrow Court, Flax Bourton, Bristol, for **Barrow Bee** 2nd 1828, born Aug. 28, 1910, calved May 4, 1915; s. Barrow Captain 393, d. Barrow Bee 1335 F.S.
1349 II. (£5.)—HIS MAJESTY THE KING, Sandringham, for **Dusky** 2018 F.S., born in 1910, calved April 20, 1915, breeder unknown.
1347 III. (£3.)—HIS MAJESTY THE KING, for **Darkie** 2015, born in 1909, calved May 23, 1915, breeder unknown.
1351 R. N. & H. C.—H. MARTIN GIBBS, for **Barrow Buttercup** 2nd.
H. C.—1348, 1353, 1354.

Class 185.—Dexter Heifers, calved in 1913 or 1914. [8 entries.]

- 1350 I. (£10.)—THE HON. MRS. CLAUD PORTMAN, Goldicote, Stratford-on-Avon, for **Shrapnel**, date of birth unknown, calved April 13, 1915, breeder unknown.
1361 II. (£5.)—R. TAIT ROBERTSON, The Hutch, Malahide, Co. Dublin, for **La Mancha Gladys**, Ear Mark 1548, born in Feb., 1913, breeder unknown.
1359 III. (£3.)—HIS MAJESTY THE KING, Sandringham, for **Tulip** 2304, born in 1913, breeder unknown.
1362 R. N. & H. C.—R. TAIT ROBERTSON, for **La Mancha Madeline**.
H. C.—1355.

Class 186.—Milk Yield Prizes, open to Dexter Cows and Heifers entered in Class 184 only. [6 entries.]

- 1348 I. (£10.)—HIS MAJESTY THE KING, Sandringham, for **Diadem** 2172, born in 1912, calved May 8, 1915, breeder unknown.
1349 II. (£5.)—HIS MAJESTY THE KING, for **Dusky**. (See Class 184.)
1347 III. (£3.)—HIS MAJESTY THE KING, for **Darkie**. (See Class 184.)
H. C.—1350, 1353.

Butter Tests.² [74 entries.]

Class 187a.—Cows (in-milk), exceeding 900 lb. live weight.

- 803 I. (£15.)—JOHN EVANS, for **Burton Lovely**. (See Class 94.)
1224 II. (£10, & S. M.³)—THE HON. MRS. TENNANT, for **Lady Typist**. (See Class 170.)
1221 III. (£5, & B. M.⁴)—J. H. SMITH-BARRY, for **Marionette**. (See Class 165.)
Certificates of Merit.⁵—1208, 1218, 1227.
H. C.—721, 722, 723, 732, 744, 752, 754, 755, 769, 806, 907, 923, 924, 945, 948, 949, 950, 971, 1020, 1022, 1147, 1152, 1293, 1299, 1301.

Class 187b.—Cows (in-milk), not exceeding 900 lb. live weight.

- 1222 I. (£15, & G. M.⁶)—J. H. SMITH-BARRY, for **Nerine**. (See Class 170.)
1216 II. (£10.)—G. MURRAY SMITH, for **Laxton Lady**. (See Class 165.)
1205 III. (£5.)—MRS. BRADISH ELLAMPS, Manor House, Little Marlow, for **Eva Garrick**, whole colour, born Feb. 23, 1907, calved Feb. 27, 1915, bred by Mrs. S. A. Vulp, St. Peter's, Jersey; s. Mabel's Rule 10 (3722), d. Dora Garrick (10286).
Certificates of Merit.⁴—1206, 1217, 1223, 1225, 1229, 1242.

SHEEP.

Oxford Down.

Class 188.—Oxford Down Shearling Rams. [13 entries.]

- 1372 I. (£19.)—H. W. STILGOE, The Grounds, Adderbury, near Banbury.
1371 II. (£5.)—FREDERICK PENSON, Lower Farm, Taston, Charlbury, Oxon.
1365 III. (£3, & 1363 R. N. & H. C.)—ALBERT BRASSETT, Heythrop Park, Chipping Norton.
H. C.—1367, 1373.

¹ Challenge Cup given by the English Kerry and Dexter Cattle Society for the best Animal in Classes 183-185.

² Prizes given by the English Jersey Cattle Society.

³ Gold Medal, Silver Medal, and Bronze Medal given by the English Jersey Cattle Society for the three Jersey animals obtaining the greatest number of points in the Butter Tests.

⁴ Certificates of Merit given by the English Jersey Cattle Society for Jersey Cows entered in or eligible for entry in the English Jersey Herd Book, not being Prize Winners in the Tests, obtaining the following points:—Cows under five years old obtaining 30 points; Cows five years old and upwards obtaining 35 points.

xc *Award of Live Stock Prizes at Nottingham, 1915.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor.":]

Class 189.—Oxford Down Ram Lambs. [10 entries.]

- 1390 I. (£10.)—R. W. HOBBS & SONS, Kelmescott, Lechlade.
 1378 II. (£5.)—HENRY AKERS & CO., Mead House, Black Bourton, Clanfield, Oxon.
 1382 III. (£3.)—G. F. MOORE, Chardwar, Bourton-on-the-Water.
 1383 R. N. & H. C.—FREDERICK PENSON, Lower Farm, Taston, Charlbury, Oxon.
 H. C.—1384. C.—1376, 1379.

Class 190.—Three Oxford Down Ram Lambs. [7 entries.]

- 1390 I. (£10.) & 1389 II. (£5.)—R. W. HOBBS & SONS, Kelmescott, Lechlade.
 1391 III. (£3.)—G. F. MOORE, Chardwar, Bourton-on-the-Water.
 1386 R. N. & H. C.—GEORGE ADAMS & SONS, Royal Prize Farm, Faringdon.
 H. C.—1387, 1392.

Class 191.—Three Oxford Down Shearling Ewes. [4 entries.]

- 1394 I. (£10.) & 1393 R. N. & H. C.—ALBERT BRASSEY, Heythrop Park, Chipping Norton.
 1395 II. (£5.) & 1396 III. (£3.)—MISS ALICE DE ROTHSCHILD, Waddesdon Manor, Aylesbury.

Class 192.—Three Oxford Down Ewe Lambs. [8 entries.]

- 1401 I. (£10.)—R. W. HOBBS & SONS, Kelmescott, Lechlade.
 1403 II. (£5.)—FREDERICK PENSON, Lower Farm, Taston, Charlbury, Oxon.
 1402 III. (£3.)—G. F. MOORE, Chardwar, Bourton-on-the-Water.
 1397 R. N. & H. C.—GEORGE ADAMS & SONS, Royal Prize Farm, Faringdon.
 H. C.—1404. C.—1398, 1399.

Shropshires.²

Class 193.—Shropshire Two-Shear Rams. [9 entries.]

- 1405 I. (£10.) & 1408 R. N. & H. C.—A. S. BERRY, Shenstone Hall, Lichfield.
 1411 II. (£5.)—KENNETH W. MILNES, Stanway Manor, Church Stretton.
 1410 III. (£3.)—MRS. W. F. INGE, Thorpe Hall, Tamworth.
 H. C.—1407. C.—1406.

Class 194.—Shropshire Shearling Rams. [15 entries.]

- 1416 I. (£10.)—FRANK BIBBY, Hardwicke Grange, Shrewsbury.
 1423 II. (£5.)—MRS. W. F. INGE, Thorpe Hall, Tamworth.
 1426 III. (£3.)—KENNETH W. MILNES, Stanway Manor, Church Stretton.
 1414 IV. (£2.)—A. S. BERRY, Shenstone Hall, Lichfield.
 1428 R. N. & H. C.—EDWARD CRAIG TANNER, Shrawardine, Shrewsbury.
 H. C.—1422. C.—1415.

Class 195.—Five Shropshire Shearling Rams. [9 entries.]

- 1432 I. (£15.)—JAMES J. BREWIN, Whitehouse, Barnston, near Birkenhead.
 1439 II. (£10.)—A. S. BERRY, Shenstone Hall, Lichfield.
 1434 III. (£5.)—MRS. W. F. INGE, Thorpe Hall, Tamworth.
 1431 R. N. & H. C.—R. E. BIRCH, Bryneclyn, St. Asaph, Denbighshire.
 H. C.—1430, 1436, 1437. C.—1433.

Class 196.—Three Shropshire Ram Lambs. [5 entries.]

- 1438 I. (£10.)—R. E. BIRCH, Bryneclyn, St. Asaph, Denbighshire.
 1441 II. (£5.)—E. & F. NOCK, Harrington Hall, Shifnal, Salop.
 1442 III. (£3.)—EDWARD CRAIG TANNER, Shrawardine, Shrewsbury.
 1440 R. N. & H. C.—KENNETH W. MILNES, Stanway Manor, Church Stretton.
 H. C.—1439.

Class 197.—Three Shropshire Shearling Ewes. [9 entries.]

- 1448 I. (£10.)—MRS. W. F. INGE, Thorpe Hall, Tamworth.
 1443 II. (£5.)—A. S. BERRY, Shenstone Hall, Lichfield.
 1451 III. (£3.)—EDWARD CRAIG TANNER, Shrawardine, Shrewsbury.
 1444 R. N. & H. C.—FRANK BIBBY, Hardwicke Grange, Shrewsbury.
 H. C.—1450. C.—1449.

Class 198.—Three Shropshire Ewe Lambs. [7 entries.]

- 1452 I. (£10.)—R. E. BIRCH, Bryneclyn, St. Asaph, Denbighshire.
 1458 II. (£5.)—EDWARD CRAIG TANNER, Shrawardine, Shrewsbury.
 1453 III. (£3.)—JAMES J. BREWIN, Whitehouse, Barnston, near Birkenhead.
 1457 R. N. & H. C.—E. & F. NOCK, Harrington Hall, Shifnal, Salop.
 H. C.—1454, 1456. C.—1455.

¹ Prizes given by the Oxford Down Sheep Breeders' Association.
² £45 towards these Prizes were given by the Shropshire Sheep Breeders' Association.

Award of Live Stock Prizes at Nottingham, 1915. xci

[Unless otherwise stated, each prize animal named below was "bred by exhibitor,"]

Southdowns.

Class 199.—*Southdown Two Shear Rams.*¹ [13 entries.]

- 1463 I. (£10, & Champion.²)—SIR JEREMIAH COLMAN, BT, Gatton Park, Surrey.
 1471 II. (£5.)—JAMES R. WEST, Alscot Park, Stratford-on-Avon.
 1468 III. (£3.) & 1470 R. N. & H. C.—LADY WERNHER, Luton Hoo, Luton.
 H. C.—1469, 1482, 1484. C.—1465.

Class 200.—*Southdown Shearling Rams.* [17 entries.]

- 1480 I. (£10, & R. N. for Champion.²)—CAPT. DERMOT MCCALMONT, Crockfords, Newmarket.
 1484 II. (£5.) & 1485 III. (£3.)—LADY WERNHER, Luton Hoo, Luton.
 1486 R. N. & H. C.—JAMES R. WEST, Alscot Park, Stratford-on-Avon.
 H. C.—1476, 1487. C.—1472, 1474.

Class 201.—*Three Southdown Shearling Rams.*¹ [10 entries.]

- 1489 I. (£10.)—HIS MAJESTY THE KING, Sandringham.
 1403 II. (£5.)—SIR JEREMIAH COLMAN, BT, Gatton Park, Surrey.
 1402 III. (£3.)—W. M. CAZALET, Fairlawne, Tonbridge.
 1485 R. N. & H. C.—CAPT. DERMOT MCCALMONT, Crockfords, Newmarket.
 H. C.—1480, 1481, 1486. C.—1484.

Class 202.—*Three Southdown Ram Lambs.* [11 entries.]

- 1499 I. (£10.)—HIS MAJESTY THE KING, Sandringham.
 1506 II. (£5.)—SIR JEREMIAH COLMAN, BT, Gatton Park, Surrey.
 1507 III. (£3.)—CAPT. DERMOT MCCALMONT, Crockfords, Newmarket.
 1501 R. N. & H. C.—W. M. CAZALET, Fairlawne, Tonbridge.
 H. C.—1500. C.—1502, 1505.

Class 203.—*Three Southdown Shearling Ewes.* [6 entries.]

- 1511 I. (£10, & Champion.³) & 1510 III. (£3.)—HIS MAJESTY THE KING, Sandringham.
 1512 II. (£5.)—W. M. CAZALET, Fairlawne, Tonbridge.
 C.—1513.

Class 204.—*Three Southdown Ewe Lambs.* [9 entries.]

- 1516 I. (£10.)—HIS MAJESTY THE KING, Sandringham.
 1518 II. (£5.)—SIR JEREMIAH COLMAN, BT, Gatton Park, Surrey.
 1522 III. (£3.)—CAPT. DERMOT MCCALMONT, Crockfords, Newmarket.
 1520 R. N. & H. C.—CAPT. A. C. HALL, The Manor, Great Rollright, Chipping Norton.
 H. C.—1519, 1521. C.—1524.

Hampshire Downs.

Class 205.—*Hampshire Down Two-Shear Rams.*⁴ [3 entries.]

- 1526 I. (£10.)—ARTHUR S. BOWLBY, Gilston Park, Harlow, for **Eastwick Peter Pan**.
 1527 II. (£5.)—GEORGE PHILIPPI, Crawley Court, near Winchester, for **Crawley No. 20**.

Class 206.—*Hampshire Down Shearling Rams.* [7 entries.]

- 1532 I. (£10.)—JAMES H. ISMAY, Iwerne Minster House, Blandford, for **Iwerne Joffre**.
 1538 II. (£5.)—CAPT. J. A. MORRISON, Basildon Park, Reading.
 1529 III. (£3.)—ALFRED E. BLACKWELL, The Home Farm, Chipperfield, King's Langley, for **Birch**.
 1528 R. N. & H. C.—ALFRED E. BLACKWELL, for **Bugle**.

Class 207.—*Hampshire Down Ram Lambs.*⁴ [19 entries.]

- 1541 I. (£10.)—CAPT. J. A. MORRISON, Basildon Park, Reading.
 1537 II. (£5.) & 1535 IV. (£2.)—JAMES H. ISMAY, Iwerne Minster House, Blandford.
 1539 III. (£3.)—MRS. JERVOISE, Herford Park, Basingstoke.
 1544 R. N. & H. C.—GEORGE PHILIPPI, Crawley Court, near Winchester.
 H. C.—1536, 1543. C.—1540.

¹ Prizes given by the Southdown Sheep Society.

² Champion Gold Medal given by the Southdown Sheep Society for the best Ram in Classes 199 and 200.

³ Silver Medal given by the Southdown Sheep Society for the best Pen of Ewes or Ewe Lambs in Classes 203 and 204.

⁴ Prizes given by the Hampshire Down Sheep Breeders' Association.

xvii Award of Live Stock Prizes at Nottingham, 1915.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor.]

Class 208.—Three Hampshire Down Ram Lambs. [6 entries.]

- 1547 I. (£10, & R. N. for Champion.¹)—JAMES H. ISMAY, Iwerne Minster House, Blandford.
 1549 II. (£5.)—CAPT. J. A. MORRISON, Basildon Park, Reading.
 1545 III. (£3.)—ALFRED E. BLACKWELL, The Home Farm, Chipperfield, King's Langley.
 1548 R. N. & H. C.—MRS. JERVOISE, Herriard Park, Basingstoke.
 H. C.—1550.

Class 209.—Three Hampshire Down Shearling Ewes. [3 entries.]

- 1552 I. (£10), & 1551 III. (£3.)—HERBERT GOSLING, Botley's Park, Chertsey.
 1553 II. (£5.)—WILLIAM TODD, Valley Farm, Little Ponton, Grantham.

Class 210.—Three Hampshire Down Ewe Lambs. [4 entries.]

- 1555 I. (£10, & Champion.¹)—JAMES H. ISMAY, Iwerne Minster House, Blandford.
 1554 II. (£5.)—ALFRED E. BLACKWELL, The Home Farm, Chipperfield, King's Langley.
 1557 III. (£3.)—CAPT. J. A. MORRISON, Basildon Park, Reading.
 1556 R. N. & H. C.—MRS. JERVOISE, Herriard Park, Basingstoke.

Suffolks.

Class 211.—Suffolk Two-Shear Rams.² [3 entries.]

- 1559 I. (£10), & 1560 II. (£5.)—HERBERT E. SMITH, The Grange, Walton, Felixstowe.
 1558 III. (£3.)—S. R. SHERWOOD, Playford, Ipswich, for Juniper 13116, bred by Chivers & Sons, Ltd., Histon, Cambs.

Class 212.—Suffolk Shearling Rams. [4 entries.]

- 1563 I. (£10), & 1564 III. (£3.)—HERBERT E. SMITH, The Grange, Walton, Felixstowe.
 1562 II. (£5.)—S. R. SHERWOOD, Playford, Ipswich, for Playford Grange 2nd.
 1561 R. N. & H. C.—CHIVERS & SONS, LTD., Histon, Cambs.

Class 213.—Suffolk Ram Lambs.² [8 entries.]

- 1571 I. (£10), & 1572 II. (£5.)—HERBERT E. SMITH, The Grange, Walton, Felixstowe.
 1566 III. (£3.)—THE EXORS. OF THE LATE C. S. EWER, Western Hall, Foxcarth, near Long Melford.
 1570 R. N. & H. C.—S. R. SHERWOOD, Playford, Ipswich.
 C.—1563, 1567, 1568.

Class 214.—Three Suffolk Ram Lambs. [6 entries.]

- 1578 I. (£10.)—HERBERT E. SMITH, The Grange, Walton, Felixstowe.
 1577 II. (£5.)—S. R. SHERWOOD, Playford, Ipswich.
 1575 III. (£3.)—GEORGE A. GOODCHILD, The Oak House, Great Yeldham, Essex.
 1573 R. N. & H. C.—CHIVERS & SONS, LTD., Histon, Cambs.
 H. C.—1574. C.—1576.

Class 215.—Three Suffolk Shearling Ewes. [3 entries.]

- 1580 I. (£10.)—CHIVERS & SONS, LTD., Histon, Cambs.
 1581 II. (£5.)—W. F. PAUL, Kirtou Lodge, near Ipswich.
 1579 III. (£3.)—CHIVERS & SONS LTD., for ewes, bred by Martin Slater, Weston Colville, Cambs.

Class 216.—Three Suffolk Ewe Lambs. [6 entries.]

- 1587 I. (£10.)—HERBERT E. SMITH, The Grange, Walton, Felixstowe.
 1586 II. (£5.)—S. R. SHERWOOD, Playford, Ipswich.
 1582 III. (£3.)—CHIVERS & SONS, LTD., Histon, Cambs.
 1583 R. N. & H. C.—THE EXORS. OF THE LATE C. S. EWER, Western Hall, Foxcarth, near Long Melford.
 H. C.—1584. C.—1585.

Dorset Downs.³

Class 217.—Dorset Down Shearling Rams. [3 entries.]

- 1590 I. (£10.)—RANDOLPH TONY, Charlsworth Manor, Whitechurch, Blandford.
 1588 II. (£5.), & 1589 R. N. & H. C.—SIR EVERARD HAMBO, K.C.V.O., Milton Abbey, Blandford.

¹ Champion Prize of £10 given by the Hampshire Down Sheep Breeders' Association for the best Ram Lamb, Pen of Ram Lambs or Ewe Lambs in Classes 207, 208 and 210.
² Prizes given by the Suffolk Sheep Society.
³ £15 towards these Prizes were given by the Dorset Down Sheep Breeders' Association.

Award of Live Stock Prizes at Nottingham, 1915. xciii

Unless otherwise stated, each prize animal named below was "bred by exhibitor."

Class 218.—Three Dorset Down Ram Lambs. [3 entries.]

1302 I. (£10), & 1593 II. (£5).—RANDOLPH TORY, Charisworth Manor, Whitechurch, Blandford.

1304 R. N. & H. C.—SIR EVERARD HAMRO, K.C.V.O., Milton Abbey, Blandford.

Class 219.—Three Dorset Down Shearling Ewes. [4 entries.]

1508 I. (£10), & 1599 II. (£5).—RANDOLPH TORY, Charisworth Manor, Whitechurch, Blandford.

1506 R. N. & H. C.—SIR EVERARD HAMRO, K.C.V.O., Milton Abbey, Blandford.

Dorset Horns.¹

Class 220.—Dorset Horn Shearling Rams, dropped after November 1, 1913. [2 entries.]

1400 I. (£10), & 1601 II. (£5).—FRANK J. MERSON & SON, Farringdon, North Petherton, Bridgwater.

Class 221.—Three Dorset Horn Ram Lambs, dropped after November 1, 1914. [2 entries.]

1602 I. (£10, & R. N. for Champion.²)—F. P. BROWN, Kingston Farm, Chillerton, Isle of Wight.

1603 II. (£5).—FRANK J. MERSON & SON, Farringdon, North Petherton, Bridgwater.

Class 222.—Three Dorset Horn Shearling Ewes, dropped after November 1, 1913. [3 entries.]

1604 I. (£10, & Champion.²)—F. P. BROWN, Kingston Farm, Chillerton, Isle of Wight.

1606 II. (£5).—THE RT. HON. GENERAL J. E. B. SEELY, D.S.O., M.P., Brooke Farm, Brooke, Isle of Wight, for ewes bred by Sir Charles Seely, Bart., Brooke Farm.

1605 III. (£3).—FRANK J. MERSON & SON, Farringdon, North Petherton, Bridgwater.

Class 223.—Three Dorset Horn Ewe Lambs, dropped after November 1, 1914. [3 entries.]

1608 I. (£10).—FRANK J. MERSON & SON, Farringdon, North Petherton, Bridgwater.

1607 II. (£5), & 1608 III. (£3).—F. P. BROWN, Kingston Farm, Chillerton, Isle of Wight.

Ryelands.³

Class 224.—Ryeland Rams, Two-Shear and upwards. [6 entries.]

1613 I. (£10).—MRS. R. HERBERT, Clytha Park, Abergavenny, for Clytha Spark 168, born in 1912, bred by H. A. Christy, Llangoed, Brecon.

1612 II. (£5).—THE EXORS. OF THE LATE F. E. GOUGH, Bodenham, Herefordshire, for Bodenham Viscount 151, born in 1912.

1611 III. (£3).—HUGH A. CHRISTY, Llangoed Castle, Llyswen, for Llangoed Perfection 189, born in 1913.

1614 R. N. & H. C.—CECIL CLAUDE JACOBS, De la Beche, Aldworth, Berks., for De la Beche Wonder. C.—1610.

Class 225.—Ryeland Shearling Rams. [7 entries.]

1616 I. (£10).—HUGH A. CHRISTY, Llangoed Castle, Llyswen, for Llangoed Bandit.

1618 II. (£5).—HUGH A. CHRISTY, for Llangoed Star.

1619 III. (£3).—THE EXORS. OF THE LATE F. E. GOUGH, Bodenham, Herefordshire, for Bodenham Gentleman.

1617 R. N. & H. C.—HUGH A. CHRISTY, for Llangoed Banker. C.—1620, 1622.

Class 226.—Three Ryeland Ram Lambs. [4 entries.]

1626 I. (£10).—DAVID J. THOMAS, Talschuddu, Brecon.

1625 II. (£5).—MRS. R. HERBERT, Clytha Park, Abergavenny.

1624 III. (£3).—THE EXORS. OF THE LATE F. E. GOUGH, Bodenham, Herefordshire.

Class 227.—Three Ryeland Shearling Ewes. [3 entries.]

1628 I. (£10), & 1627 III. (£3).—HUGH A. CHRISTY, Llangoed Castle, Llyswen.

1629 II. (£5).—THE EXORS. OF THE LATE F. E. GOUGH, Bodenham, Herefordshire.

¹ £18 towards these Prizes were given by the Dorset Horn Sheep Breeders' Association.

² Champion Silver Medal given by the Canadian Industrial Exhibition for the best exhibit of Dorset Horn Sheep in Classes 220-223.

³ £27 towards these Prizes were given by the Ryeland Flock Book Society.

xciv *Award of Live Stock Prizes at Nottingham, 1915.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor".]

Class 228.—Three Ryeland Ewe Lambs. [4 entries.]

1632 I. (£10.)—MRS. R. HERBERT, Clytha Park, Abergavenny.

1633 II. (£5.)—DAVID J. THOMAS, Talachdda, Brecon.

1631 III. (£3.)—THE EXORS. OF THE LATE F. E. GOUGH, Bodenham, Herefordshire.

Kerry Hill (Wales).¹

Class 229. —Kerry Hill (Wales) Rams, Two-Shear and upwards. [2 entries.]

1631 I. (£10.)—WILLIAM ALDERSON, Glanmihell, Kerry, Mont., for Kerry Important 3346, born in 1912.

H. C.—1635.

Class 230. —Kerry Hill (Wales) Shearling Rams. [4 entries.]

1637 I. (£10.)—LORD HARLECH, Brogyntyn, Oswestry, for Brogyntyn Isaac.

1636 II. (£5.)—WILLIAM ALDERSON, Glanmihell, Kerry, Mont.

H. C.—1638.

C.—1639.

Class 231.—Three Kerry Hill (Wales) Shearling Ewes. [3 entries.]

1640 I. (£10.)—LORD HARLECH, Brogyntyn, Oswestry.

1641 II. (£5.)—CAPTAIN J. M. NAYLOR, Leighton Hall, Welshpool.

Lincolns.²

Class 232.—Lincoln Two-Shear Rams. [9 entries.]

1647 I. (£10, & Champion.³)—CLIFFORD NICHOLSON, Horkstow Manor, Barton-on-Humber, for Riby Perfect Model 13978, bred by Henry Dudding, Riby Grove, Great Grimsby.

1650 II. (£5, & R. N. for Champion.³)—R. & W. WRIGHT, Necton and Bracebridge Heaths, Lincoln.

1648 III. (£3.)—CLIFFORD NICHOLSON, for Riby Flock Continued 13926, bred by Henry Dudding, Riby Grove, Great Grimsby.

1649 R. N. & H. C.—HERBERT PEARS, Potterhanworth, Lincoln.

H. C.—1643.

Class 233.—Lincoln Shearling Rams. [16 entries.]

1662 I. (£10.) & 1663 II. (£5.)—CLIFFORD NICHOLSON, Horkstow Manor, Barton-on-Humber.

1667 III. (£3.)—R. & W. WRIGHT, Necton and Bracebridge Heaths, Lincoln.

1659 R. N. & H. C.—CHARLES F. HOWARD, Necton Rise, Lincoln.

H. C.—1652.

C.—1655, 1658, 1665.

Class 234.—Five Lincoln Shearling Rams. [9 entries.]

1674 I. (£15.)—CLIFFORD NICHOLSON, Horkstow Manor, Barton-on-Humber.

1676 II. (£10.)—R. & W. WRIGHT, Necton and Bracebridge Heaths, Lincoln.

1675 III. (£5.)—W. H. WATSON, Temple Bruer, Lincoln.

1672 R. N. & H. C.—ANCELL B. HOLT, Home Farm, Sturton, Brigg, Lincs.

H. C.—1668.

C.—1673.

Class 235.—Three Lincoln Ram Lambs. [12 entries.]

1688 I. (£10.)—R. & W. WRIGHT, Necton and Bracebridge Heaths, Lincoln.

1678 II. (£5.)—J. H. DEAN & SONS, Heath House, Necton, Lincoln.

1681 III. (£3.)—ANCELL B. HOLT, Home Farm, Sturton, Brigg, Lincs.

1685 R. N. & H. C.—CLIFFORD NICHOLSON, Horkstow Manor, Barton-on-Humber.

C.—1677.

Class 236.—Three Lincoln Shearling Ewes. [7 entries.]

1690 I. (£10.) & 1691 II. (£5.)—CHARLES E. HOWARD, Necton Rise, Lincoln.

1694 III. (£3.)—HERBERT PEARS, Potterhanworth, Lincoln.

1695 R. N. & H. C.—W. H. WATSON, Temple Bruer, Lincoln.

C.—1688.

¹ £10 towards these Prizes were given by the Kerry Hill (Wales) Flock Book Society.
² £20 towards these Prizes were given by the Lincoln Long-Wool Sheep Breeders Association.

³ Champion Prize of £5 given by the Lincoln Long-Wool Sheep Breeders Association for the best Ram in Classes 232 and 233.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 237.—Three Lincoln Ewe Lambs. [11 entries.]

- 1706 I. (£10).—R. & W. WRIGHT, Nocton and Bracebridge Heath, Lincoln.
 1698 II. (£5).—ANCELL B. HOLT, Home Farm, Sturton, Brigg, Lincs.
 1703 III. (£3).—C. W. TINDALL, Wainfleet, Lincs.
 1705 E. N. & H. C.—W. H. WATSON, Temple Bruer, Lincoln.
 C.—1702.

Class 238.—Three Lincoln Yearling Ewes, in wool. [5 entries.]

- 1708 I. (£10). & 1709 III. (£3).—J. H. DEAN & SONS, Heath House, Nocton, Lincoln.
 1711 II. (£5).—W. H. WATSON, Temple Bruer, Lincoln.
 1707 E. N. & H. C.—CAPT. CLIVE BEHRENS, Swinton Grange, Malton.
 C.—1710.

Leicesters.¹

Class 239.—Leicester Shearling Rams. [8 entries.]

- 1712 I. (£10).—JOHN CRANSWICK, Field House, Hummanby.
 1719 II. (£5). & 1718 III. (£3).—E. F. JORDAN, Eastburn, Driffield.
 C.—1717.

Class 240.—Three Leicester Ram Lambs. [4 entries.]

- 1721 I. (£10).—GEORGE HARRISON, Gainford Hall, Darlington.
 1720 II. (£5).—JOHN CRANSWICK, Field House, Hummanby.
 1723 III. (£3).—MRS. S. PERRY-HERRICK, Beau Manor Park, Loughborough.
 C.—1722.

Class 241.—Three Leicester Shearling Ewes. [3 entries.]

- 1725 I. (£10). & 1724 II. (£5).—E. F. JORDAN, Eastburn, Driffield.
 1726 III. (£3).—MRS. S. PERRY-HERRICK, Beau Manor Park, Loughborough.

Class 242.—Three Leicester Ewe Lambs. [3 entries.]

- 1727 I. (£10).—JOHN CRANSWICK, Field House, Hummanby.
 1728 II. (£5).—GEORGE HARRISON, Gainford Hall, Darlington.
 1729 III. (£3).—MRS. S. PERRY-HERRICK, Beau Manor Park, Loughborough.

Border Leicesters.²

Class 243.—Border Leicester Rams, Two-Shear and upwards. [2 entries.]

- 1731 I. (£10).—THOMAS WINTER & SON, Lotherton Park, Aberford, Leeds, for ram, born in 1911, bred by the late Robert O. Lamb, Hayton House, How Mill, Carlisle.
 1730 II. (£5).—R. G. MURRAY & SON, Spittal, Bizar, for Spittal Squire 3656, born in 1912.

Class 244.—Border Leicester Shearling Rams. [3 entries.]

- 1734 I. (£10).—R. G. MURRAY & SON, Spittal, Bizar.
 1735 II. (£5). & 1732 III. (£3).—ANDREW M. MONTGOMERY, Nether Hall, Castle Douglas.

Class 245.—Border Leicester Shearling Ewes. [4 entries.]

- 1736 I. (£10. & Champion.³)—R. G. MURRAY & SON, Spittal, Bizar.
 1736 II. (£5. & R. N. for Champion.⁴)—ANDREW M. MONTGOMERY, Nether Hall, Castle Douglas.
 1735 III. (£3).—ANDREW M. MONTGOMERY, for ewe, bred by James Campbell & Sons, Heston, Mid Calder.

Wensleydales.⁴

Class 246.—Wensleydale Rams, Two-Shear and upwards, entered or eligible for entry in the Wensleydale Blue-faced Flock Book. [4 entries.]

- 1739 I. (£10).—LORD HENRY BENTINCK, M.P., Underley Hall, Kirkby Lonsdale, for Royal Gotim 1948, born in 1913.
 1741 II. (£5).—JOHN A. WILLIS, Manor House, Carperby, Yorks, for Grand Champion, born in 1913, bred by the Exors. of the late Thomas Willis Carperby.
 1740 III. (£3).—LORD HENRY BENTINCK, M.P., for Underley Dreadnought 1868, born in 1913.

¹ £18 towards these Prizes were given by the Leicester Sheep Breeders' Association.

² £18 towards these Prizes were given by the Society of Border Leicester Sheep Breeders.

³ Perpetual Challenge Cup given by the Society of Border Leicester Sheep Breeders for the best Ram or Ewe in Classes 243-245.

⁴ £18 towards these Prizes were given by the Wensleydale Blue-faced Sheep Breeders' Association and Flock Book Society.

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[Unless otherwise stated, each prize animal named below was "bred by exhibition."

Class 247.—Wensleydale Shearling Rams. [4 entries.]

- 1744 I. (£10.)—**LORD HENRY BENTINCK**, M.P., Underley Hall, Kirkby Lonsdale.
 1746 II. (£5.)—**JOHN A. WILLIS**, Manor House, Carperby, Yorks, for ram bred by Harold Dewhurst, Aireville, Skipton.
 1745 III. (£3.)—**JOHN W. GREENSILL**, Holme-on-Swale, Thirsk.
 1743 R. N. & H. C.—**LORD HENRY BENTINCK**, M.P., for **Quality Blue**.

Class 248.—Three Wensleydale Shearling Rams, entered or eligible for entry in the Wensleydale Blue-faced Flock Book. [4 entries.]

- 750 I. (£10.)—**JOHN A. WILLIS**, Manor House, Carperby, Yorks, for rams bred by John M. Spensley, West Bolton, Carperby.
 1748 II. (£5.)—**JOHN W. GREENSILL**, Holme-on-Swale, Thirsk.
 1747 III. (£3.)—**LORD HENRY BENTINCK**, M.P., Underley Hall, Kirkby Lonsdale.
 1749 R. N. & H. C.—**JOHN A. WILLIS**, Manor House, Carperby, Yorks.

Class 249.—Three Wensleydale Shearling Ewes. [4 entries.]

- 1754 I. (£10.)—**JOHN A. WILLIS**, Manor House, Carperby, Yorks, for ewes bred by the Executors of the late Thomas Willis, Carperby.
 1751 II. (£5.) & 1752 III. (£3.)—**LORD HENRY BENTINCK**, M.P., Underley Hall, Kirkby Lonsdale.
 1753 R. N. & H. C.—**JOHN W. GREENSILL**, Holme-on-Swale, Thirsk.

Lonks.¹

Class 250.—Lank Rams, Shearling and upwards. [3 entries.]

- 1756 I. (£10.)—**EDWARD SMITH**, Summerhouse Farm, Cowling, near Keighley, for **Goalkeeper** 262, born in 1912.
 1757 II. (£5.)—**EDWARD SMITH**, for **Newhall Pride** 300, born in 1914, bred by G. Barcroft, Scout Moor, Shuttleworth, Edenfield, Manchester.

Class 251.—Three Lank Shearling Ewes. [2 entries.]

- 1758 I. (£10.) & 1758 II. (£5.)—**EDWARD SMITH**, Summerhouse Farm, Cowling, near Keighley.

Derbyshire Gritstones.

Class 252.—Derbyshire Gritstone Rams, Shearling and upwards.

[1 entry.]

- 1760 I. (£10.)—**RICHARD STUART**, Brook Vale, Sowerby, Garstang, for **Sowerby Victor**, born in 1914.

Class 253.—Three Derbyshire Gritstone Shearling Ewes.

[1 entry.]

- 1761 I. (£10.)—**RICHARD STUART**, Brook Vale, Sowerby, Garstang.

Kent or Romney Marsh.²

Class 254.—Kent or Romney Marsh Two-Shear Rams. [14 entries.]

- 1773 I. (£10. & **Champion**³), 1775 II. (£5.) & 1773 R. N. & H. C.—**J. EGERTON QUESTED**, The Firs, Cheriton, Kent.
 1770 III. (£3.)—**S. W. MILLEN**, Syndale Valley, Faversham.
 C.—1762, 1767.

Class 255.—Kent or Romney Marsh Shearling Rams. [21 entries.]

- 1781 I. (£10. & **R. N. for Champion**³), L. H. & G. W. FINN, Westwood Court, Faversham.
 1795 II. (£5.), 1794 III. (£3.) & 1795 R. N. & H. C.—**J. EGERTON QUESTED**, The Firs, Cheriton, Kent.
 H. C.—1789, 1796. C.—1782, 1792.

Class 256.—Five Kent or Romney Marsh Shearling Rams. [8 entries.]

- 1804 I. (£15.)—**J. EGERTON QUESTED**, The Firs, Cheriton, Kent.
 1801 II. (£10.)—**L. H. & G. W. FINN**, Westwood Court, Faversham.
 1800 III. (£5.)—**G. FOSTER CLARK**, Boughton Mount, Maidstone.
 1798 R. N. & H. C.—**J. RAYNER BETTS**, Greenhill Farm, Ottham, Maidstone.
 H. C.—1803. C.—1802.

¹ £5 towards these Prizes were given by the Lank Sheep Breeders' Association.

² £48 towards these Prizes were given by the Kent or Romney Marsh Sheep Breeders' Association.

³ **Champion Prize of £10 10s.** given by the Kent or Romney Marsh Sheep Breeders' Association for the best Ram in Classes 254 and 255.

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Unless otherwise stated, each prize animal named below was "bred by exhibitor.")

- Class 257.—Three Kent or Romney Marsh Ram Lambs.** [9 entries.]
 1808 I. (£10), & 1809 III. (£3.)—L. H. & G. W. FINN, Westwood Court, Faversham.
 1807 II. (£3.)—G. FOSTER CLARK, Boughton Mount, Maidstone.
 1813 R. N. & H. C.—J. EGBERTON QUESTED, The Firs, Cheriton, Kent.
 H. C.—1812.
 C.—1805, 1806.

- Class 258.—Three Kent or Romney Marsh Shearling Ewes.** [7 entries.]
 1809 I. (£10.)—J. EGBERTON QUESTED, The Firs, Cheriton, Kent.
 1807 II. (£5), & 1818 III. (£3.)—FREDERICK NEAME, Macknade, Faversham.
 1816 R. N. & H. C.—A. J. HICKMAN, Court Lodge, Egerton, Kent.
 H. C.—1815.
 C.—1814.

- Class 259.—Three Kent or Romney Marsh Ewe Lambs.** [9 entries.]
 1827 I. (£10.)—S. W. MILLEN, Syndale Valley, Faversham.
 1828 II. (£5.)—FREDERICK NEAME, Macknade, Faversham.
 1824 III. (£3.)—L. H. & G. W. FINN, Westwood Court, Faversham.
 1829 R. N. & H. C.—J. EGBERTON QUESTED, The Firs, Cheriton, Kent.
 C.—1821, 1823.

Cotswolds.¹

- Class 260.—Cotswold Shearling Rams.** [8 entries.]
 1830 I. (£10), 1832 II. (£5), & 1831 III. (£3.)—W. T. GARNE & SON, Aldsworth, Northleach.
 1835 R. N. & H. C.—MURTON & LONG, Pudding Norton Hall, Fakenham.
 H. C.—1833, 1836.

- Class 261.—Three Cotswold Ram Lambs.** [2 entries.]
 1838 I. (£10), & 1839 II. (£5.)—W. T. GARNE & SON, Aldsworth, Northleach.

- Class 262.—Three Cotswold Shearling Ewes.** [3 entries.]
 1840 I. (£10), & 1841 II. (£5.)—W. T. GARNE & SON, Aldsworth, Northleach.
 1842 III. (£3.)—WILLIAM HOULTON, Broadfield Farm, Northleach.

- Class 263.—Three Cotswold Ewe Lambs.** [2 entries.]
 1843 I. (£10), & 1844 II. (£5.)—W. T. GARNE & SON, Aldsworth, Northleach.

Devon Long-Wools.

- Class 264.—Devon Long-Wool Rams, Shearling and upwards.**
 [1 entry.]
 1845 I. (£10.)—FREDERICK WHITE, Torweston, Williton, Somerset, for ram, born in 1914.
Class 265.—Three Devon Long-Wool Shearling Ewes. [1 entry.]
 1846 I. (£10.)—FREDERICK WHITE, Torweston, Williton, Somerset.

South Devons.²

- Class 266.—South Devon Two-Shear Rams.** [2 entries.]
 1847 I. (£10.)—JOHN STOOKE, Sherford, Brixton, Plymouth.
 1848 II. (£5.)—W. & H. WHITLEY, Primley Farm, Paignton.

- Class 267.—South Devon Shearling Rams.** [4 entries.]
 1851 I. (£10), & 1852 II. (£5.)—W. & H. WHITLEY, Primley Farm, Paignton.
 1850 R. N. & H. C.—JOHN STOOKE, Sherford, Brixton, Plymouth.

- Class 268.—Three South Devon Ewe Lambs.** [2 entries.]
 1853 I. (£10.)—JOHN STOOKE, Sherford, Brixton, Plymouth.
 1854 II. (£5.)—W. & H. WHITLEY, Primley Farm, Paignton.

- Class 269.—Three South Devon Shearling Ewes.** [3 entries.]
 1856 I. (£10), & 1857 II. (£5.)—W. & H. WHITLEY, Primley Farm, Paignton.

- Class 270.—Three South Devon Ewe Lambs.** [2 entries.]
 1858 I. (£10.)—JOHN STOOKE, Sherford, Brixton, Plymouth.
 1859 II. (£5.)—W. & H. WHITLEY, Primley Farm, Paignton.

¹ £18 towards these Prizes were given by the Cotswold Sheep Society.

² £30 towards these Prizes were given by the South Devon Flock Book Association.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Dartmoors.¹

Class 271.—*Dartmoor Rams, Two-Shear and upwards.* [3 entries.]

- 1862 I. (£10.)—ROBERT S. LUSCOMBE, Wisdome, Cornwood, Devon, for **Wisdome Lumpy** 694, born in 1913.
 1861 II. (£5.)—JOHN R. T. KINGWELL, Great Aish, South Brent, Devon, for ram, born in 1913, bred by H. Northey, Lake, Lifton, Devon.
 1860 R. N. & H. C. W. A. JOHNS & SONS, Cleave, Lifton, Devon, for **Lake Leader**.

Class 272.—*Dartmoor Shearling Rams.* [5 entries.]

- 1865 I. (£10.)—W. A. JOHNS & SONS, Cleave, Lifton, Devon, for **Cleave No. 143**.
 1866 II. (£5.)—ROBERT S. LUSCOMBE, Wisdome, Cornwood, Devon, for **Wisdome Model** 690.
 1864 R. N. & H. C.—W. A. JOHNS & SONS, for **Cleave No. 141**.

Class 273.—*Three Dartmoor Shearling Ewes.* [2 entries.]

- 1868 I. (£10.) & 1869 II. (£5.)—JOHN R. T. KINGWELL, Great Aish, South Brent, Devon.

Exmoor Horns.²

Class 274.—*Exmoor Horn Rams, Two-Shear and upwards.* [3 entries.]

- 1872 I. (£10.)—JOHN ROBINS, Lydcott Hall, High Bray, South Molton, for **Leigh No. 30** 478, born in 1912, bred by T. C. Peares, Leigh, Dulverton.
 1870 II. (£5.)—H. KINGSFORD-LETHBRIDGE, Wood, South Tawton, Okehampton, for **Highercombe No. 33** 565, born in 1912, bred by D. J. Tapp, Highercombe, Dulverton.
 1871 III. (£3.)—LORD POLTMORE, Court Hall, North Molton, for **Nadrid No. 20** 586, born in 1913, bred by F. S. Yendell, Nadrid, South Molton.

Class 275.—*Exmoor Shearling Rams.* [4 entries.]

- 1876 I. (£10.)—JOHN ROBINS, Lydcott Hall, High Bray, South Molton, for **Lydcott No. 23**.
 1875 II. (£5.)—LORD POLTMORE, Court Hall, North Molton, for **Zeal Lad**, bred by R. S. Westcott, Zeal, HawkrIDGE.
 1874 III. (£3.)—H. KINGSFORD-LETHBRIDGE, Wood, South Tawton, Okehampton, for **Wood No. 22**.
 1873 R. N. & H. C.—H. KINGSFORD-LETHBRIDGE, for **Wood No. 20**.

Class 276.—*Three Exmoor Shearling Ewes.* [2 entries.]

- 1877 I. (£10.)—H. KINGSFORD-LETHBRIDGE, Wood, South Tawton, Okehampton.
 1878 II. (£5.)—JOHN ROBINS, Lydcott Hall, High Bray, South Molton.

Cheviots.³

Class 277.—*Cheviot Rams, Two-Shear and upwards.* [6 entries.]

- 1881 I. (£10.) & 1883 R. N. & H. C.—JOHN ROBSON, Newton, Bellingham, Northumberland, for rams, born in 1913.
 1881 II. (£5.)—JACOB ROBSON, Byrness, Otterburn, for **Newlands General**, born in 1913, bred by Messrs. Hogg, Newlands, Gifford.
 1882 III. (£3.)—JACOB ROBSON, for ram born in 1913.
 H. C.—1880.

Class 278.—*Cheviot Shearling Rams.* [9 entries.]

- 1882 I. (£10.)—JOHN ROBSON, Newton, Bellingham.
 1889 II. (£5.) & 1891 R. N. & H. C.—JACOB ROBSON, Byrness, Otterburn.
 1887 III. (£3.)—H. D. LOHMER, Callands, West Linton, Peeblesshire.

Class 279.—*Cheviot Shearling Ewes.* [9 entries.]

- 1861 I. (£10, & **Champion**),⁴ & 1902 III. (£3.)—JOHN ROBSON, Newton, Bellingham.
 1897 II. (£5, & **R. N. for Champion**),⁴—H. D. LOHMER, Callands, West Linton, Peeblesshire.
 1900 R. N. & H. C.—JACOB ROBSON, Byrness, Otterburn.

¹ £15 towards these Prizes were given by the Dartmoor Sheep Breeders' Association.

² £18 towards these Prizes were given by the Exmoor Horn Sheep Breeders' Society.

³ £18 towards these Prizes were given by Breeders of Cheviot Sheep.

⁴ The "Berthwick" Challenge Cup, given by the Cheviot Sheep Society for the best ram or ewe in Classes 277-279.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Herdwicks.¹

Class 280.—*Herdwick Rams, Two-Shear and upwards.* [4 entries.]

- 1901 I. (£10.)—THE EARL OF LONSDALE, Whitehaven Castle, Whitehaven, for ram, born in 1911.
 1906 II. (£5.)—S. D. STANLEY-DODGSON, Tarnbank, Cockermouth, for **Snowball**, born in 1908, bred by John Rothery, Warsdale Head Hall, Gosforth.
 H. C.—1903. C.—1905.

Class 281.—*Herdwick Shearling Rams.* [4 entries.]

- 1900 I. (£10.)—S. D. STANLEY-DODGSON, Tarnbank, Cockermouth, for **Harrot**.
 1910 II. (£5.)—S. D. STANLEY-DODGSON, for **Mockerkin**, bred by William Abbott, Mockerkin, Cockermouth.
 1908 R. N. & H. C.—THE EARL OF LONSDALE, Whitehaven Castle, Whitehaven.
 C.—1907.

Class 282.—*Three Herdwick Shearling Ewes.* [3 entries.]

- 1913 I. (£10.)—S. D. STANLEY-DODGSON, Tarnbank, Cockermouth.
 1911 II. (£5), & 1912 R. N. & H. C.—THE EARL OF LONSDALE, Whitehaven Castle, Whitehaven.

Welsh Mountain.

Class 283.—*Welsh Mountain Rams, Shearling and upwards.* [7 entries.]

- 1916 I. (£10.)—ROBERT ROBERTS, Rhydygarnedd, Towyn, Merioneth, for **Rhydygarnedd Goalkeeper**, born in 1913.
 1919 II. (£5.)—THE UNIVERSITY COLLEGE OF NORTH WALES, College Farm, Aber, Bangor, for **Snowdon G 3 765**, born in 1914.
 1915 R. N. & H. C.—ROBERT ROBERTS, for **Boneddwr**.
 H. C.—1920. C.—1914.

Class 284.—*Three Welsh Mountain Shearling Ewes.* [4 entries.]

- 1923 I. (£10), & 1921 R. N. & H. C.—THE UNIVERSITY COLLEGE OF NORTH WALES, College Farm, Aber, Bangor.
 1922 II. (£5.)—THE UNIVERSITY COLLEGE OF WALES, Aberystwyth, for ewes, bred by R. N. Jones, Brynmelyn, Corwen.
 H. C.—1921.

Black-faced Mountain.

Class 285.—*Black-faced Mountain Rams, Shearling and upwards.*

[7 entries.]

- 1931 I. (£10.)—PHILIP SOWERREY, Bank Hall, Newbiggin, Carlisle, for **Tighnablair 2nd**, born in 1913.
 1930 II. (£5.)—JOHN ROBSON, Newton, Bellingham, for ram, born in 1914.
 1927 R. N. & H. C.—WALTER N. COCHRANE, St. John's Chapel, co. Durham.
 C.—1926.

Class 286.—*Black-faced Mountain Shearling Ewes.* [6 entries.]

- 1935 I. (£10), & 1936 II. (£5.)—JOHN ROBSON, Newton, Bellingham.

PIGS.

Large Whites.

Class 287.—*Large White Boars, farrowed in 1911, 1912, or 1913.*

[9 entries.]

- 1943 I. (£10, & Champion 2)—R. E. W. STEPHENSON, The Brook, Liverpool, for **Stanford Roger 3rd 1638**, born Jan. 2, 1912, bred by G. Pindell, Altrincham; s. Worsley Roger 49th 1259, d. Stanford Girl 3284 by Worsley Turk 2nd 11333.
 1939 II. (£5, & E. N. for Champion 1)—SIR GILBERT GREENALL, BT, C.V.O., Walton Hall, Warrington, for **Worsley Turk 51st 1621**, born Jan. 2, 1912, bred by the late Earl of Ellesmere, Worsley, near Manchester; s. Worsley Turk 30th 1633, d. Worsley Miss 18th 30536 by Worsley Turk 4th 1127.

¹ £15 towards these Prizes were given by Breeders of Herdwick Sheep.
² Champion Gold Medal given by the National Pig Breeders' Association for the best Boar in Classes 287-290.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

1938 III. (£3.)—SIR GILBERT GREENALL, BT., C.V.O., for **Jay of Worsley 14th 16147**, born Jan. 6, 1912, bred by D. R. Daybell, Bottesford, Nottingham; s. Mollington Jay of Bottesford 10965, d. Bottesford Empress 5th 29436 by Ruddington Roger of Bottesford 10093.

1946 R. N. & H. C.—ALFRED W. WHITE, Hillegom, Spelding, for **Spalding Vulcan**.
H. C.—1945. C.—1940, 1941.

Class 288.—Large White Boars, farrowed in 1914, before July 1.
[9 entries.]

1951 I. (£10.)—EDMUND WHERRY, Bourne, Lincs., for **Bourne Bandmaster 18307**, born Jan. 28; s. Bourne Banner 5th 15947, d. Bourne Belle 17th 37720 by Monarch of Sowerby 11825.

1947 II. (£5.)—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington, for **Worsley Turk 56th 19281**, born Jan. 4; s. Worsley Turk 28th 15531, d. Worsley Empress 60th 33648 by Worsley Monarch 25th 11149.

1950 III. (£3.)—EDMUND WHERRY, for **Bourne Bandmaster 2nd 18309**, born Jan. 28; s. Bourne Banner 5th 15947, d. Bourne Belle 17th 37720 by Monarch of Sowerby 11825.

1948 R. N. & H. C.—SIR GILBERT GREENALL, BT., C.V.O., for **Worsley Turk 67th**.
H. C.—1950. C.—1949.

Class 289.—Large White Boars, farrowed in 1914, on or after July 1.
[11 entries.]

1958 I. (£10.)—ROWLAND P. HAYNES, Delves Green Farm, Wednesbury, for **Caldmore Cœur de Lion**, born July 14; s. Cœur de Lion of Caldmore 18569, d. Caldmore Jewel 34942 by Ruddington Knight 7603.

1961 II. (£5.)—EDMUND WHERRY, Bourne, Lincs., for **Bourneo 2nd 18463**, born July 3, bred by George Pinlott, Altrincham; s. Stamford Roger 3rd 16330, d. Bottesford Stamford Cowship 3rd 31474 by Mollington Jay of Bottesford 10965.

1962 III. (£3.)—R. E. W. STEPHENSON, The Brook, Liverpool, for boar, born July 14, bred by R. P. Haynes, Delves Green Farm, Wednesbury; s. Cœur de Lion of Caldmore 18569, d. Caldmore Jewel 34942 by Ruddington Knight 7603.

1956 R. N. & H. C.—JOHN FILLINGHAM, George Hotel, Grantham, for **Grantham Dreadnought**.
H. C.—1965, 1966. C.—1959, 1960.

Class 290.—Large White Boars, farrowed in 1915. [28 entries.]

1970 I. (£10.)—DANIEL R. DAYDELL, Bottesford, Nottingham, for boar, born Jan. 3; s. Ringleader of Bottesford 2nd 17823, d. Bottesford Empress 8th 37682 by Mollington Jay of Bottesford 10965.

1975 II. (£5.)—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington, for boar, born Jan. 1; s. Jay of Worsley 12th 16143, d. Queen of Audlem 39044 by Worsley Emperor 38th 15479.

1966 III. (£3.)—JOHN NEAVEYSON, Eye, Peterborough, for boar, born Jan. 3; s. Don 18063, d. Eye Lass 13th 31952 by Hugo 12597.

1974 IV. (£2.)—SIR GILBERT GREENALL, BT., C.V.O., for boar, born Jan. 3; s. Worsley Turk 51st 16621, d. Sapperton Assorted 23432 by Worsley Reginald 11201.

1961 R. N. & H. C.—EDMUND WHERRY, Bourne, Lincs.
H. C.—1967, 1978. C.—1969, 1978, 1983.

Class 291.—Large White Breeding Sows, farrowed in 1911, 1912, or 1913.
[14 entries.]

1960 I. (£10, & Champion.)²—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington, for **Worsley Lady 7th 36350**, born Jan. 10, 1912, farrowed Mar. 27, bred by the late Earl of Ellesmere, Worsley Hall, near Manchester; s. Worsley Turk 18th 14623, d. Ladylike of Worsley 3rd 28316 by Bouncing Boy of Nottingham 16627.

2000 II. (£5, & R. N. for Champion.)²—SIR GILBERT GREENALL, BT., C.V.O., for **Worsley Lady 10th 39820**, born July 10, 1912, farrowed Jan. 26, bred by the late Earl of Ellesmere, Worsley Hall, near Manchester; s. Worsley Emperor 38th 15479, d. Nottingham Lady Mollington 1st 23200 by Nottingham Philip 19015.

1968 III. (£3.)—SIR GILBERT GREENALL, BT., C.V.O., for **Queen of Audlem 39044**, born May 25, 1912, farrowed Jan. 7, bred by the late Earl of Ellesmere, Worsley Hall, near Manchester; s. Worsley Emperor 38th 15479, d. Worsley Marchington Queen 26648 by Worsley Turk 4th 11217.

2007 IV. (£2.)—R. E. W. STEPHENSON, The Brook, Liverpool, for **Dogsthorpe Dido 31862**, born March 5, 1911, farrowed Jan. 1, bred by H. G. Wadlon, Dogsthorpe, Peterborough; s. Sowerby Gladiator 14034, d. Tallington Treasure 29626 by Ruddington Right Stamp 8717.

2004 R. N. & H. C.—J. I. MAJOR, White House, Ramsey, Hunts, for **Ramsey Primrose 16th**.
H. C.—2003, 2008. C.—1995, 1996, 2001, 2002.

¹ Prizes given by the National Pig Breeders' Association.

² Champion Gold Medal given by the National Pig Breeders' Association for the Best Sow in Classes 291-295.

Award of Live Stock Prizes at Nottingham, 1915. ci

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 282.—Large White Sows, farrowed in 1914, before July 1.

[16 entries.]

- 2620 I. (£10).—R. E. W. STEPHENSON, Tue Brook, Liverpool, for *West Derby Frisky* 16th 42574, born Jan. 1; s. *West Derby Bashful Lad* 16419, d. *West Derby Frisky* 8th 36516 by *Bourne Giant* Goliath 14631.
- 2614 II. (£5).—ROWLAND P. HAYNES, Delves Green Farm, Wednesbury, for *Bashful of Caldmore*, born March 30, bred by R. E. W. Stephenson, Tue Brook, Liverpool; s. *West Derby Bashful Lad* 16419, d. *West Derby Frisky* 33478 by *Broomehouse Hercules* 3631.
- 2621 III. (£3).—A. E. TODD, Stoneybank, Musselburgh, Midlothian, for *Matchless Maud*, born Jan. 3, bred by D. R. Daybell, Bottesford, Nottingham; s. *Ringleader of Bottesford* 17621, d. *Nottingham Matchless* 1st 29016 by *Mollington Jay* of Bottesford 10965.
- 2623 IV. (£2).—ALFRED W. WHITE, Hillegom, Spalding, for *Spalding Empress* 4272, born Jan. 3; s. *Worsley Emperor* 56th 16645, d. *That's 'Er* 38492 by *That's 'Im* 15343.
- 2611 E. N. & H. C.—SIR GILBERT GREENALL, BT., C.V.O., for *Worsley Buttercup* 23rd. H. C.—2010, 2012, 2022. C.—2016, 2017.

Class 293.—Large White Sows, farrowed in 1914, on or after July 1.

[16 entries.]

- 2638 I. (£10).—EDMUND WHERRY, Bourne, Lincs., for *Buttercup of Bourne* 2nd 40769, born July 3, bred by George Pinlott, Altrincham; s. *Stamford Roger* 3rd 16339, d. *Bottesford Stamford Cowslip* 3rd 31474 by *Mollington Jay* of Bottesford 10965.
- 2630 II. (£5).—ROWLAND P. HAYNES, Delves Green Farm, Wednesbury, for *Caldmore Jewel* 6th, born July 14; s. *Cœur de Lion* of Caldmore 18569, d. *Caldmore Jewel* 34812 by *Buddington Knight* 3963.
- 2629 III. (£3).—JOHN FILLINGHAM, George Hotel, Grantham, for *Grantham Edith*, born July 5; s. *Manfred* of Grantham 18861, d. *Grantham Grandiflora* 41236 by *Ramsey Unicus* 15225.
- 2636 IV. (£2).—A. E. TODD, Stoneybank, Musselburgh, Midlothian, for sow, born July 19; s. *Bottesford Radiance* 15941, d. *Gipsy Queen* 6th by *Gentleman Roger* 14967.
- 2639 E. N. & H. C.—EDMUND WHERRY, for *Bourne Beatrice* 80th. H. C.—2028, 2031, 2033, 2035. C.—2023, 2028, 2032, 2034.

Class 294.—Three Large White Sows, farrowed in 1915. [8 entries.]

- 2646 I. (£10).—EDMUND WHERRY, Bourne, Lincs., for sows, born Jan. 6; s. *Bourne Banger* 2nd 17111, d. *Bottesford Stamford Cowslip* 3rd 31474 by *Mollington Jay* of Bottesford 10965.
- 2645 II. (£5).—LORD LUCAS, Wrest Park, Amptill, for sows, born Jan. 3; s. *Radiant* 2nd 18257, d. *There She Be* 39346 by *That's 'Im* 15343.
- 2641 III. (£3).—DANIEL R. DAYBELL, Bottesford, Nottingham, for sows, born Jan. 3; s. *Ringleader of Bottesford* 2nd 17623, d. *Bottesford Empress* 8th 37682 by *Mollington Jay* of Bottesford 10965.
- 2647 E. N. & H. C.—R. E. W. STEPHENSON, Tue Brook, Liverpool. H. C.—2042, 2046. C.—2044.

Middle Whites.

Class 295.—Middle White Boars, farrowed in 1911, 1912, or 1913.

[3 entries.]

- 2650 I. (£10, & Champion).—LEOPOLD C. PAGET, Middlethorpe Hall, York, for *Sentinel of Wharfedale* 18123, born Jan. 12, 1912, bred by Charles Spencer, The Hartley Farms, Brampton, Hunts; s. *Holywell Spider* 15691, d. *Dunsh of Holywell* 34038 by *Holywell Vicer* 3rd 12073.
- 2649 II. (£5).—LEOPOLD C. PAGET, for *Reveller of Wharfedale* 18115, born Jan. 6, 1913, bred by the Trustees of the Earl of Lathom, Lathom House, Ormskirk; s. *Blythe Reveller* 15574, d. *Mrs. Futtie* 30659 by *Tarbock Cinder* 12101.
- 2651 III. (£3).—THOMAS WILLCOCK, Dunham Mount, Bowdon, Cheshire, for *David of Croxteth* 18659, born June 30, 1912, bred by W. B. Hill, Prestwood Cottage, Wolverhampton; s. *Prestwood David* 15603, d. *Holywell Gloucester* 30818 by *Castlecroft Rufus* 12045.

Class 296.—Middle White Boars, farrowed in 1914.² [7 entries.]

- 2652 I. (£10, & R. N. for Champion).—JOHN CHIVERS, Histon, Cambridge, for *Shrewsbury*, born Jan. 27, bred by H. R. Beeton, Hammonds, Checkendon, Reading; s. *Walton of Pendley* 15711, d. *Hammond's Salonica* 36918 by *Hammond's Hardwear*.
- 2653 II. (£5).—W. B. HILL, Prestwood Cottage, Wolverhampton, for boar, born Jan. 25; s. *Rover* of Prestwood 18117, d. *Prestwood Mary* 38672 by *Prestwood Buzler* 14151.

¹ Champion Gold Medal given by the National Pig Breeders' Association for the best boar in Classes 295-297.

² Prizes given by the National Pig Breeders' Association.

cii *Award of Live Stock Prizes at Nottingham, 1915.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

2955 **III. (43.)**—LEOPOLD C. PAGET, Middlethorpe Hall, York, for **Wharfedale Policeman** 19537, born Jan. 28; s. Sentinel of Wharfedale 18123, d. Wharfedale Peace 37684 by Wharfedale Reveller 11329.

2956 **R. N. & H. C.**—CHARLES SPENCER, The Harthay Farms, Brampton, Hunts, for **Durbar of Harthay**.

Class 297.—*Middle White Boars, farrowed in 1915.* [10 entries.]

2963 **I. (410.)**—LEOPOLD C. PAGET, Middlethorpe Hall, York, for boar, born Jan. 7, bred by the Earl of Sefton, Croxeth Hall, Liverpool; s. Croxeth Banker 2nd 16733, d. Tarbock Pattie 13th 2284 by Walton Turret 12th 8453.

2965 **II. (45.)**—LEOPOLD C. PAGET, for boar, born Jan. 3, s. Croxeth Chamber 1st 14405, d. Wharfedale Revella 34328 by Wharfedale Reveller 11329.

2962 **III. (43.)**—ALBERT LAIRD, The Manor, Sundon, Dunstable, for boar, born Jan. 2; s. Sundon Victor 18129, d. Dorothy Walton of Sundon 42639 by Walton of Pendley.

2965 **R. N. & H. C.**—LEOPOLD C. PAGET, Middlethorpe Hall, York.

Class 298.—*Middle White Breeding Sows, farrowed in 1911, 1912, or 1913.*

[4 entries.]

2971 **I. (410, & Champion.)**—LEOPOLD C. PAGET, Middlethorpe Hall, York, for **Wharfedale Revella** 34332, born Jan. 2, 1911, farrowed Jan. 3; s. Wharfedale Reveller 11329, d. Wharfedale Marguerite 27194 by Wharfedale Flush 13127.

2976 **II. (45.)**—ALBERT LAIRD, The Manor, Sundon, Dunstable, for **Sundon Spring Rib** 1st, born March 3, 1913, farrowed Jan. 3; s. Sundon Conqueror 16799, d. Sundon Conline 3rd 38000 by The Abbot of Sundon 15699.

2969 **III. (43.)**—W. B. HILL, Prestwood Cottage, Wolverhampton, for **Prestwood Annie**, born Jan. 8, 1912, farrowed Jan. 13; s. Prestwood Bugler 14451, d. Holywell Gloucester 30818 by Castlecroft Rufus 12945.

Class 299.—*Middle White Sows, farrowed in 1914.* [10 entries.]

2975 **I. (410, & R. N. for Champion.)**—LEOPOLD C. PAGET, Middlethorpe Hall, York, for **Wharfedale Plapper** 34370, born March 5; s. Earl of Wharfedale 16749, d. Wharfedale Joyful 31658 by Wharfedale Reveller 11329.

2973 **II. (45.)**—JOHN CHIVERS, Histon, Cambridge, for **Histon Holly Bush**, born Jan. 15; s. Sefton of Holywell 14465, d. Holly Bush 2nd 36938 by Fordham Holywell 14413.

2974 **III. (43.)**—JOHN CHIVERS, for **Histon Holly Bush** 2nd, born Jan. 14; s. Sefton of Holywell 14465, d. Holly Bush 2nd 36938 by Fordham Holywell 14413.

2975 **R. N. & H. C.**—W. B. HILL, Prestwood Cottage, Wolverhampton.
H. C. 2975. C.—2975.

Class 300.—*Three Middle White Sows, farrowed in 1915.* [6 entries.]

2987 **I. (410.)**—LEOPOLD C. PAGET, Middlethorpe Hall, York, for sows, born Jan. 3; s. Croxeth Chamber 1st 19405, d. Wharfedale Revella 34328 by Wharfedale Reveller.

2985 **II. (45.)**—LEOPOLD C. PAGET, for sows, born Jan. 3 and 4, bred by the Earl of Sefton, Croxeth Hall, Liverpool; ss. Croxeth Acrobat 16033 and Croxeth Banker 2nd 16733, ds. Croxeth Pattie 32nd 39838 and Croxeth Rose 42nd by Carrington Vicar 3rd 15563.

2984 **III. (43.)**—ALBERT LAIRD, The Manor, Sundon, Dunstable, for sows, born Jan. 2; s. Sundon Victor 18129, d. Dorothy Walton of Sundon 42639 by Walton of Pendley.

2985 **R. N. & H. C.**—LEOPOLD C. PAGET, Middlethorpe Hall, York.

Tamworths.

Class 301.—*Tamworth Boars, farrowed in 1911, 1912, or 1913.*

[4 entries.]

2980 **I. (410 & Champion.)**—D. W. PHILLIP, The Redlands, Whitacre, Birmingham, for **Kerr's Choice** 15593, born Aug. 23, 1913, bred by H. C. Stephens, Chiddington, Salisbury; s. Peer's Choice 18933, d. Chiddington Golden Jewel 24282 by Rolleston Victor 8357.

2989 **II. (45.)**—ROBERT INDOXTON, The Hawthorns, Knowle, Warwickshire, for **Knowle Macqueen** 18243, born Aug. 6, 1913; s. Warwick-bire 18297, d. Kathleen 34556 by Dick of Osmaston 13143.

2982 **III. (43.)**—CHARLES THELLUSON, Brodsworth Hall, Doncaster, for **Brodsworth Contriver**, born Aug. 7, 1912; s. Warwickshire 18297, d. Brodsworth Constance 37119 by Knowle Sylphus 14917.

2991 **R. N. & H. C.**—J. I. & A. RILEY, Pateley, Leebury, for **Bristol**.

¹ Champion Gold Medal given by the National Pig Breeders' Association for the best Sow in Classes 298 and 299.

² Champion Gold Medal given by the National Pig Breeders' Association for the best Boar in Classes 301-305.

Award of Live Stock Prizes at Nottingham, 1915. ciii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor.]"

Class 302.—Tamworth Boars, farrowed in 1914. [2 entries.]

2094 I. (£10, & R. N. for Champion.²)—D. W. PHILIP, The Redlands, Whitacre, Birmingham, for **General Haig** 1881, born July 28, bred by H. C. Stephens, Cholderton, Salisbury; s. Whitacre Enterprise 1830, d. Cholderton Queen Maud 3450 by Duke of Gloucester 1217.

2095 II. (£5.)—ROBERT IBBOTSON, The Hawthorns, Knowle, for **General Joffre** 1883, born July 28, bred by H. C. Stephens, Cholderton, Salisbury; s. Whitacre Enterprise 1830, d. Cholderton Queen Maud 3450 by Duke of Gloucester 1217.

Class 303.—Tamworth Boars, farrowed in 1915. [8 entries.]

2097 I. (£10.)—ROBERT IBBOTSON, The Hawthorns, Knowle, for boar, born Jan. 3; s. Knowle Lord Rosebery 1945, d. Salisbury Queen 2nd 4348 by Whitacre Enterprise.

2099 II. (£5.) D. W. PHILIP, The Redlands, Whitacre, Birmingham, for boar, born Jan. 5; s. M.P. 1890, d. Cholderton Tibbie 40218 by Peer's Choice 1863.

2100 III. (£3.) J. L. & A. RILEY, Purley, Ledbury, for boar, born Jan. 24; s. Bristol 1918, d. Purley Selly 4094 by Osmaston 12157.

2096 R. N. & H. C.—ROBERT DE HAMEL, Middleton Hall, Tamworth.
H. C.—2101. C.—2095.

Class 304.—Tamworth Breeding Sows, farrowed in 1911, 1912, or 1913.
[4 entries.]

2105 I. (£10, & Champion.³)—D. W. PHILIP, The Redlands, Whitacre, Birmingham, for **Cholderton Tibbie** 40218, born May 22, 1913, farrowed Jan. 5, bred by H. C. Stephens, Cholderton, Salisbury; s. Peer's Choice 1863, d. Cholderton Queen Maud 3450 by Duke of Gloucester 1217.

2108 II. (£5.) SIR PETER C. WALKER, BT., Osmaston Manor, Derby, for **Osmaston Aris** 4618, born Oct. 16, 1912, farrowed March 5; s. Knowle Professor 1879, d. Osmaston Acer 34822 by Elford Bishop 13175.

2104 III. (£3.)—ROBERT IBBOTSON, The Hawthorns, Knowle, for **Knowle Model** 2nd 10576, born Dec. 18, 1912, farrowed March 3; s. Osmaston Buxus 14633, d. Knowle Model 34008 by Knowle Lord Minto 12191.

Class 305.—Tamworth Sows, farrowed in 1914. [7 entries.]

2109 I. (£10, & R. N. for Champion.³)—ROBERT IBBOTSON, The Hawthorns, Knowle, for **Salisbury Queen** 2nd 3408, born March 31; s. Whitacre Enterprise 1830, d. Cholderton Golden Queen 1th 31492 by Elford Rector 14592.

2110 II. (£5.)—D. W. PHILIP, The Redlands, Whitacre, Birmingham, for **Whitacre Golden Beauty** 43506, born Jan. 3; s. Lord Bobbie 18251, d. Cholderton Golden Beauty 2nd 34480 by Duke of Gloucester 1217.

2113 III. (£3.)—SIR PETER C. WALKER, BT., Osmaston Manor, Derby, for **Stumpy of Osmaston** 43482, born Jan. 1, bred by Mrs. F. Cooper, Culland Hall, Bradsford, Derby; s. Elford Bishop 13175, d. Dillon Stumpy 7th 31130 by Forester of Dillon.

2112 R. N. & H. C.—SIR PETER C. WALKER, BT., for **Jill** 3rd.
H. C.—2107.

Class 306.—Three Tamworth Sows, farrowed in 1915. [4 entries.]

2115 I. (£10.)—ROBERT IBBOTSON, The Hawthorns, Knowle, for sows, born Jan. 3 and 5; ss. Knowle Lord Rosebery 1945 and Sunstar 18299, ds. Salisbury Queen 2nd 43408 by Whitacre Enterprise 1830 and Knowle Sunburst 40284 by Osmaston Buxus.

2117 II. (£5.)—D. W. PHILIP, The Redlands, Whitacre, Birmingham, for sows, born Jan. 15; s. Kerr's Choice 18953, d. Whitacre Miss 43509 by Whitacre Jester 18993.

2116 III. (£3.)—F. A. N. NEWDEGATE, M.P., Arbury, Nuneaton, for sows, born Jan. 2; s. Knowle Ambition 18219, d. Knowle Marion 37272 by Osmaston Buxus 14633.

2114 R. N. & H. C.—ROBERT DE HAMEL, Middleton Hall, Tamworth.

Berkshires.

Class 307.—Berkshire Boars, farrowed in 1911, 1912, or 1913.

[7 entries.]

2132 I. (£10, & Champion.⁴)—G. S. F. EDWARDS, Nanthorpe Hall, Yorks., for **Little John** 10857, born Jan. 3, 1913, bred by R. B. Vincent, Manor Farm, Waterton; s. Herrison Lad 18637, d. Compton Grace 10727 by Manor First Venture 18572.

2113 II. (£5.)—WILFRED BUCKLEY, Moundsmere Manor, Basingstoke, for **Moundsmere Warrior** 1554, born June 15, 1913; s. Moundsmere Curious 16522, d. Moundsmere Kernal 16529 by Axford Viscount 15008.

¹ Prizes given by the National Pig Breeders' Association.

² Champion Gold Medal given by the National Pig Breeders' Association for the best Boar in Classes 301-303.

³ Champion Gold Medal given by the National Pig Breeders' Association for the best Sow in Classes 304 and 305.

⁴ Champion Prize of £5 5s. given by the British Berkshire Society for the best Boar or Sow in Classes 307-311.

civ *Award of Live Stock Prizes at Nottingham, 1915.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor".]

- 2123 **III. (£3.)**—JAMES H. ISMAV, Iwerne Minster, Blandford, for **Iwerne Lord** 18403, born June 25, 1913; s. Coronation Topper 16827, d. Iwerne 5th 15503 by Ambassador.
2121 **R. N. & H. C.**—(G. S. F. EDWARDS, for **Admiral Beatty** 2nd. (Cup.)—WILFRED BUCKLEY, Moundsmere Manor, Basingstoke.
H. C.—2124. C.—2119.

Class 308. —Berkshire Boars, farrowed in 1914. [10 entries.]

- 2127 **I. (£10.)**—L. CURRIE, Minley Manor, Farnborough, Hants, for **Minley King** 18394, born April 6; s. Minley Warrior 15982, d. Enham Waddell 19149 by Sir Peter B. 13251.
2130 **II. (£5.)**—SIR HUGO M. FITZHERBERT, BT., Tissington Hall, Ashbourne, for **Tissington Laddie** 18205, born Jan. 26; s. Stratton Prince 2nd 17980, d. Wyndthorpe Lassie 17201 by Wyndthorpe Confidence 2nd 15451.
2129 **III. (£3.)**—G. S. F. EDWARDS, Nunthorpe Hall, Yorks., for **Manxman**, born Feb. 4, bred by the Hon. C. B. Portman, Goldicote, Stratford-on-Avon; s. Enham Manx 15301, d. Goldicote Dolly 16245 by One A 15005.
2126 **R. N. & H. C.**—WILFRED BUCKLEY, for **Moundsmere Albert**.
H. C.—2123, 2131. C.—2134.

Class 309. —Berkshire Boars, farrowed in 1915. [18 entries.]

- 2139 **I. (£10.)**—WILFRED BUCKLEY, Moundsmere Manor, Basingstoke, for **Moundsmere Rapid**, born Jan. 3; s. Express B 17189, d. Marden Dumpy 21st 17174 by Marden Harvester 17165.
2148 **II. (£5.)**—HUGH PEACOCK, Greatford Hall, Stamford, for boar, born Jan. 2; s. Enham Masterpiece 18062, d. Greatford Edith 17309 by Walton Candida 2nd 16508.
2136 **III. (£3.)**—HIS MAJESTY THE KING, Sandringham, for boar, born Jan. 10; s. The Warrior, d. Stratton Flora 8th 17470 by Wyndthorpe Cherub 11048.
2141 **R. N. & H. C.**—L. CURRIE, Minley Manor, Farnborough, Hants.
H. C.—2133, 2137, 2149, 2152. C.—2151.

Class 310. —Berkshire Breeding Sows, farrowed in 1911, 1912, or 1913.

[9 entries.]

- 2154 **I. (£10.) & R. N. for Champion.** 3.—L. CURRIE, Minley Manor, Farnborough, Hants, for **Minley Peaceful** 16721, born Sept. 2, 1912, farrowed Jan. 2; s. Compton Supreme 13098, d. Minley Sweet 15983 by Highmore Viscount 18721.
2158 **II. (£5.)**—JAMES H. ISMAV, Iwerne Minster, Blandford, for **Manor Miss Minister** 17708, born Jan. 4, 1913, farrowed March 1, bred by A. Hiscock, Manor Farm, Motcombe; s. Compton Viscount 15516, d. Favourite Lady 16876 by Wynd Canton 14224.
2153 **III. (£3.)**—WILFRED BUCKLEY, Moundsmere Manor, Basingstoke, for **Moundsmere Primrose** 8th 16519, born Sept. 3, 1911, farrowed April 15; s. Moundsmere Michael 15234, d. Dunseld Primrose 18333 by Dunseld Mikal 12002.
2156 **R. N. & H. C.**—(G. S. F. EDWARDS, Nunthorpe Hall, Yorks., for **Venus B**.
H. C.—2159. C.—2160.

Class 311. —Berkshire Sows, farrowed in 1914. [11 entries.]

- 2168 **I. (£10.)**—JAMES H. ISMAV, Iwerne Minster, Blandford, for **Charmar** 2nd 13508, born Jan. 2, bred by J. Fricker, Sudden Grange, Wincanton; s. Robert 14335, d. Sudden Freda 16081 by Fightable 11346.
2170 **II. (£5.)**—W. HOWARD PALMER, Stokes Farm, Wokingham, for **Murrell Maid** 18476, born Jan. 10; s. Minley Champian 17344, d. Murrell Sylvia 17343 by Marlboro 3rd 14882.
2162 **III. (£3.)**—WILFRED BUCKLEY, Moundsmere Manor, Basingstoke, for **Moundsmere Daisy** 3rd 18518, born Feb. 12; s. Express B 17189, d. Moundsmere Daisy 16551 by Goldicote John 15003.
2166 **R. N. & H. C.**—(G. S. F. EDWARDS, Nunthorpe Hall, Yorks., for **Golden Dolly**.
C.—2171.

Class 312. —Three Berkshire Sows, farrowed in 1915.

[8 entries.]

- 2180 **I. (£10.)**—THE DUKE OF WESTMINSTER, Eaton Hall, Chester, for sows, born Jan. 2; s. Minley Warrior 15982, d. Eaton Ju-Ju 16284 by Royalist G. 15605.
2174 **II. (£5.)**—WILFRED BUCKLEY, Moundsmere Manor, Basingstoke, for sows, born Jan. 2; s. Express B 17189, d. Moundsmere Thorn 16524 by Goldicote John 15013.
2177 **III. (£3.)**—G. S. F. EDWARDS, Nunthorpe Hall, Yorks., for sows, born Jan. 23; s. Whitley King's Minister 13971, d. Fashion Augustus 3rd 17306 by Santor B 18447.
2173 **R. N. & H. C.**—HIS MAJESTY THE KING, Sandringham.

¹ The "Berkshire" Challenge Cup, given by the British Berkshire Society for the most points awarded in a combination of entries in Classes 307 to 312 on the basis of: Four points for a first prize, three points for a second prize, two points for a third prize, one point for a fourth prize, two points for a Championship, and one point for a Reserve for a Championship.

² Prizes given by the British Berkshire Society.

³ Champion Prize of £57s given by the British Berkshire Society for the best Boar or Sow in Classes 307-311.

Award of Live Stock Prizes at Nottingham, 1915. cv

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Large Blacks.

Class 313.—*Large Black Boars, farrowed in 1911, 1912, or 1913.*

[8 entries.]

- 2188 I. (£10, & Champion.¹)—THOMAS WARNE, Trevisquite Manor, St. Mabyn, Cornwall, for *Trevisquite Goliath* 5285, born Jan. 3, 1913; s. *Trekellund Masterpiece* 2267, d. *Trevelgos Godiva* 4th 10520 by *Sudbourne Jack* 3005.
- 2184 II. (£5.)—C. F. MARRINER, Thorpe Hall, Hasketon, Woodbridge, for *Hasketon Dreadnought* 15th 4305, born Jan. 3, 1913; s. *Ilford Dreadnought* 3245, d. *Hasketon Long Lady* 15th 9764 by *Hasketon Bodmison* 13th 2143.
- 2183 III. (£3.)—TERAH F. HOOLEY, Dry Drayton, near Cambridge, for *Drayton Peter* 4011, born April 16, 1912; s. *Henley Achilles* 1999, d. *Drayton Violet* 9010 by *Drayton Demon* 4th 2353.
- 2182 R. N. & H. C.—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for *Hasketon Coming King*, H. C.—2187. C.—2185.

Class 314.—*Large Black Boars, farrowed in 1914.*² [9 entries.]

- 2191 I. (£10, & R. N. for Champion.¹)—TERAH F. HOOLEY, Dry Drayton, near Cambridge, for *Drayton Robin Hood* 5185, born Jan. 10; s. *Docking Victor* 4221, d. *Drayton Ethel* 10730 by *Henley Achilles* 1999.
- 2190 II. (£5.)—JOHN H. GLOVER, Cornwood, South Devon, for *Elfordleigh Trumpeter* 5201, born Feb. 15, bred by Mrs. R. C. Baimbridge, Elfordleigh, Hynpton, S. Devon; s. *Tanvor Tango* 4503, d. *Elfordleigh Primrose* 12494 by *Elfordleigh Lightfoot* 3955.
- 2189 III. (£3.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for *Sudbourne Imperial* 5041, born Jan. 1; s. *Ilford Improver* 5th 4113, d. *Sudbourne Tottie* 1st 11668 by *Sudbourne Sutler* 3325.
- 2196 R. N. & H. C.—JOHN C. OLVER, Woodland Valley, Ladock, Cornwall, for *Valley Togo* 2nd, H. C.—2195. C.—2192.

Class 315.—*Large Black Boars, farrowed in 1915.* [24 entries.]

- 2207 I. (£10.)—F. A. JOHNS, Cleave, Lifton, Devon, for boar, born Jan. 13; s. *Valley Trevelgos That's Him* 4579, d. *Cleave Countess* 8th 14574 by *Cleave Hero* 3959.
- 2217 II. (£5.)—W. S. WARD, Menna, Grampond Road, Gerawall, for boar, born Jan. 10; s. *Valley Monarch* 4645, d. *Menna Queen* 8th 10106 by *Wonder of the West* 5017.
- 2221 III. (£3.)—W. & H. WHITLEY, Primley Farm, Fainton, for boar, born Jan. 6; s. *Brent King Tom* 3875, d. *Primley Eva* 13330 by *Tiptree* 1st 2933.
- 2215 IV. (£2.)—F. A. PERKINS, Little Olley, Hitchin, for boar, born Jan. 5; s. *Drayton Victor* 7th 5163, d. *Olley Princess* 2nd 11130 by *Sudbourne Negrito* 3555.
- 2201 R. N. & H. C.—JOHN H. GLOVER, Cornwood, South Devon, for *Cornwood Loyalty*, H. C.—2198, 2219. C.—2203.

Class 316.—*Large Black Breeding Sows, farrowed in 1911, 1912, or 1913.*

[10 entries.]

- 2223 I. (£10, & R. N. for Champion.³)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for *Sudbourne Jewel* 11250, born Jan. 3, 1912, farrowed Feb. 6; s. *Brent Aviator* 8663, d. *Sudbourne Justice* 1st 9442 by *Nigger* 2597.
- 2231 II. (£5.)—THOMAS WARNE, Trevisquite Manor, St. Mabyn, Cornwall, for *Trevisquite Content* 6th 13460, born Jan. 3, 1913, farrowed April 20; s. *Trekellund Masterpiece* 2267, d. *Trevisquite Content* 1th 6334 by *Trevisquite Confidence* 1243.
- 2228 III. (£3.)—C. F. MARRINER, Thorpe Hall, Hasketon, Woodbridge, for *Hasketon Long Lady* 31st 11260, born May 28, 1912, farrowed Jan. 10; s. *Ilford Dreadnought* 3245, d. *Hasketon Long Lady* 15th 9764 by *Hasketon Bodmison* 13th 2143.
- 2225 IV. (£2.)—S. F. EDGE, Gullips, Honestead, Ditchling, Sussex, for *Vahan Princess Arabella* 11874, born July 22, 1913, farrowed Jan. 15; s. *Flock Swell* 4679, d. *Flower of the Valley* 11672 by *Boscha Masterpiece* 3395.
- 2226 R. N. & H. C.—F. A. JOHNS, Cleave, Lifton, Devon, for *Cleave Countess* 2nd, H. C.—2224. C.—2227.

Class 317.—*Large Black Sows, farrowed in 1914.* [16 entries.]

- 2247 I. (£10, & Champion.³)—W. & H. WHITLEY, Primley Farm, Fainton, for *Primley Godiva* 11180, born Jan. 22; s. *Tiptree* 1st 2933, d. *Primley Chioce* 10108 by *Primley Marquis* 2451.
- 2239 II. (£5.)—JOHN C. OLVER, Woodland Valley, Ladock, Cornwall, for *Type of the Valley* 14610, born May 5; s. *Valley Togo* 4675, d. *Beauty of the Valley* 11th by *Old Fashion* 3411.

¹ Champion Prize of £10 given by the Large Black Pig Society for the best Boar in Classes 313-315.

² Prizes given by the Large Black Pig Society.

³ Silver Challenge Cup given by the Large Black Pig Society for the best Sow in Classes 316 and 317.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor."

- 2293 III. (£3.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for **Sudbourne Minx** (4006), born Jan. 10; s. Hasketon Coming King 4473, d. Sudbourne Minnie 1, 11254 by Brent Aviator 3263.
 2294 IV. (£2.)—F. A. PERKINS, Little Olmley, Hitchin, for **Olley Rose** 14434, born March 11; s. Sudbourne Negro 3555, d. Olmley Princess 9986 by Bentley Budget 3035.
 2295 R. N. & H. C.—TERAH F. HOOLEY, Dry Drayton, for **Drayton Debit**.
 H. C.—2242, 2246. C.—2234.

Class 318.—Three Large Black Sows, farrowed in 1915. [10 entries.]

- 2292 I. (£10.)—JOHN C. OLIVER, Woodland Valley, Ladock, Cornwall, for sows, born Jan. 5; s. Bixley None Such 3095, d. Beauty of the Valley 11th by Old Fashion 5411.
 2291 II. (£5.)—TERAH F. HOOLEY, Dry Drayton, near Cambridge, for sows, born Jan. 10; s. Cornwood Don John 4189, d. Popworth Lavender 13312 by Drayton Valesmaa.
 2296 III. (£3.)—THOMAS WARNE, Trevisquille Manor, St. Mabyn, Cornwall, for sows, born Jan. 2; s. Prior of the Hill 4011, d. Treveglis Godiva 4th 10620 by Sudbourne Jack 3005.
 2297 R. N. & H. C.—W. & H. WHITLEY, Primley Farm, Paignton.
 H. C.—2248, 2250. C.—2254.

Lincolnshire Curly-coated.

Class 319.—Lincolnshire Curly-coated Boars, farrowed in 1914, 1912, or 1913. [1 entries.]

- 2298 I. (£10, & Champion.)—F. E. BOWSER, Wigtoft, Boston, for **Callow Park Triumph** 2nd 2563, born Jan. 16, 1913, bred by T. G. Moore, Leicester; s. Peterboro' Earl 361 2791, d. Callow Park Blanch 7528 by Caythorpe Emperor 1391.
 2291 II. (£5.)—EDMUND BOYDS, M.P., Holy Cross, Caythorpe Grantham, for **Caythorpe Surprise**, born July 2, 1913; s. Vainona Friar 2653, d. Caythorpe Pride by Caythorpe Sampson 679.
 2299 III. (£3.)—HENRY CAUDWELL, Old Leake, Boston, for **Midville Hillman** 2901, born Jan. 30, 1913; s. Barton Hillman 2619, d. Midville Princess Eva 7th 6066 by Caythorpe Emperor 1391.

- 2290 R. N. & H. C.—GEORGE GODSON, Asgarby, Heckington, Lincs., for **Temple Prime**.

Class 320.—Lincolnshire Curly-coated Boars, farrowed in 1914.¹ [4 entries.]

- 2294 I. (£10, & R. N. for Champion.)—F. DONALD GROUNDS, Market Place, March, Cambs., for **March Duke**, born Jan. 10; s. Marshland Elm 5th 2778, d. Marshland Elmer 4th 7722 by Gibraltar Friar 2203.
 2295 II. (£5.)—GERSHOM SIMPSON, Charnwood House, Caythorpe, Lougham, Notts., for **Charnwood Friar** 2nd 3241, born Jan. 29; s. Gibraltar Friar 6th 2667, d. Charnwood Queen 2nd 8010 by Seal Toppet 2411.
 2292 III. (£3.)—HENRY CAUDWELL, Old Leake, Boston, for **Midville Fighter** 4th, born Feb. 7; s. Havenhouse Fighter 2751, d. Midville Myrtle 11th 7356 by Caythorpe Emperor 1391.

Class 321.—Lincolnshire Curly-coated Boars, farrowed in 1915. [12 entries.]

- 2296 I. (£10.)—WILLIAM ABBOTT, Swaton, near Kellingham, for boar born in Jan.; s. Caythorpe Abbott, d. Bold Susan 2212 by Swaton Crowland 597.
 2298 II. (£5.)—F. E. BOWSER, Wigtoft, Boston, for **Wigtoft Herald**, born Jan. 20; s. Callow Park Triumph 2nd 2780, d. Wigtoft Princess 12th 8310 by Westfield March 2369.
 2299 III. (£3.)—HENRY CAUDWELL, Old Leake, Boston, for **Midville Master**, born Jan. 10; s. Caythorpe Vainona 2673, d. Midville Peermore 9434 by Burton Hillman 2619.
 2297 R. N. & H. C.—WILLIAM ABBOTT.
 H. C.—2275. C.—2276.

Class 322.—Lincolnshire Curly-coated Breeding Sows, farrowed in 1911, 1912, or 1913. [7 entries.]

- 2281 I. (£10, & Champion.)—F. DONALD GROUNDS, Market Place, March, Cambs., for **Marshland Bobtail**, born in April, 1912, farrowed Feb. 28, bred by Leopold C. Harvey, Spalding; s. Marshland Duke 2673, d. Marshland Marion 6178 by Marshland Prince 1133.
 2284 II. (£5.)—GERSHOM SIMPSON, Charnwood House, Caythorpe, Lougham, Notts., for **Charnwood Duchess** 3rd 8750, born Aug. 5, 1912, farrowed Jan. 2; s. Gainsborough Masterpiece 3rd 1481, d. Midville Green Girl 3rd 6940 by Midville Abbott 1145.

¹ Champion Prize of £5 ss. given by the Lincolnshire Curly-coated Pig Breeders' Association for the best Boar in Classes 319-321.

² Prizes given by the Lincolnshire Curly-coated Pig Breeders' Association.

³ Champion Prize of £5 ss. given by the Lincolnshire Curly-coated Pig Breeders' Association for the best Sow in Classes 322 and 323.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

2283 **III. (£3.)**—F. DONALD GROUNDS, for **March Marion** 1st 8808, born Sept. 15 1913, farrowed Jan. 10; s. Marshland Elm 5th 2779, d. Marshland Marion 11th 7786 by Marshland Duke 2073.

2282 **R. N. & H. C.**—F. DONALD GROUNDS, for **Marshland Elmer** 4th, H. C.—2278. C.—2278, 2280.

Class 323.—*Lincolnshire Curly-coated Sows, farrowed in 1914.* [8 entries.]

2287 **I. (£10. & R. N. for Champion.)**¹—GEORGE GODSON, Asgarby, Heckington, Lincs., for **Heckington Jessemen** 9570, born in Jan.; s. Farmer George 2741, d. Heckington Betty 9122 by Vainona 2nd 2183.

2291 **II. (£5.)**—GERSHOM SIMPSON, Charnwood House, Caythorpe, Lowdham, Notts., for **Charnwood Queen** 5th 9606, born Jan. 29; s. Gibraltar Friar 6th 2387, d. Charnwood Queen 2nd 8010 by Keal Topper 2111.

2289 **III. (£3.)**—F. DONALD GROUNDS, Market Place, March, Cambs., for **March Elmer** 4th, born Jan. 6; s. Marshland Beau 3rd 2789, d. Marshland Elmer 4th 7722 by Gibraltar Friar 3rd 2203.

2290 **R. N. & H. C.**—GERSHOM SIMPSON, for **Charnwood Lass** 4th, H. C.—2292.

Class 324.—*Three Lincolnshire Curly-coated Sows, farrowed in 1915.* [5 entries.]

2295 **I. (£10.)**—HENRY CAUDWELL, Old Leake, Boston, for **Midville Fearnone** 18th, 19th and 20th, born Jan. 10; s. Caythorpe Vainona 2873, d. Midville Fearnone 9134 by Burton Hillman 2819.

2293 **II. (£5.)**—WILLIAM ABBOTT, Swaton, near Folkingham, for sows, born in Jan.; s. Caythorpe Abbott, d. Bold Susan 2212 by Swaton Crowland 277.

2294 **III. (£3.)**—F. E. BOWSER, Wigfold, Boston, for **Wigfold Sensation** 28th, 29th and 30th, born Jan. 12; s. Callow Park Triumph 2939, d. Wigfold Sensation 7th 7172 by Westfield March.

POULTRY.

By "Cock," "Hen," "Gander," and "Goose," are meant birds hatched previous to January 1, 1915; and by "Cockerel" and "Pullet" are meant birds hatched in 1915.

Class 325.—*Silver Grey Dorking Cocks.* [10 entries.]

7 **I. (30s. & R. N. for Champion.)**¹—JOHN MECHE, Aucternuachty, Fifeeshire.

9 **II. (20s.) & 4 III. (10s.)**—CAPT. PHIPPS HORNBY, Somerton, Somerset.

1 **R. N. & H. C.**—CHARLES AITKENHEAD, Stud Farm, Seaham Harbour, Co. Durham, H. C.—10. C.—6.

Class 326.—*Silver Grey Dorking Hens.* [7 entries.]

15 **I. (30s. & Champion.)**²—ARTHUR C. MAJOR, Ditton, Langley, Bucks.

13 **II. (20s.)**—JOHN FULTON, Poultry Yards, Collesie, Fife.

11 **III. (10s.)**—ROBERT AITKENHEAD, Estate Office, Tongswood, Hawkhurst, Kent.

14 **R. N. & H. C.**—CAPT. PHIPPS HORNBY, Somerton, Somerset, H. C.—16. C.—17.

Class 327.—*Dark Coloured Dorking Cocks.* [8 entries.]

24 **I. (30s. & Champion.)**³—MISS MARGARET FAWCETT, Ormsby, S.C., Yorks.

21 **II. (20s.)**—CAPT. PHIPPS HORNBY, Somerton, Somerset.

19 **III. (10s.)**—ROBERT AITKENHEAD, Estate Office, Tongswood, Hawkhurst, Kent.

22 **R. N. & H. C.**—ARTHUR C. MAJOR, Ditton, Langley, Bucks.

H. C.—20. C.—23.

Class 328.—*Dark Coloured Dorking Hens.* [7 entries.]

31 **I. (30s. & R. N. for Champion.)**⁴—CAPT. PHIPPS HORNBY, Somerton, Somerset.

27 **II. (20s.)**—CHARLES AITKENHEAD, Stud Farm, Seaham Harbour, Co. Durham.

23 **III. (10s.) & 26 R. N. & H. C.**—ARTHUR C. MAJOR, Ditton, Langley, Bucks.

H. C.—28. C.—30.

¹ Champion Prize of £5 5s. given by the Lincolnshire Curly-coated Pig Breeders' Association for the best Sow in Classes 322 and 323.

² Special Prize, value £1 1s., given by the Dorking Club for the best Silver Grey Dorking.

³ Special Prize, value £1 1s., given by the Dorking Club for the best Dark Coloured Dorking.

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Class 329.—Dorking Cockerels, any colour. [7 entries.]

- 38 I. (30s.)—W. G. WATSON, Hurtleigh, Roper Road, Horsham.
 35 II. (20s.)—ARTHUR C. MAJOR, Ditton, Langley, Bucks.
 33 III. (10s.)—ROBERT AITKENHEAD, Estate Office, Tongwood, Hawkhurst, Kent.
 34 R. N. & H. C.—CAPT. PHIPPS HORNBY, Somerton, Somerset.
 H.C.—39.

Class 330.—Dorking Pullets, any colour. [10 entries.]

- 47 I. (30s.)—J. A. & M. F. SMYTH, The Lodge, Coleraine.
 40 II. (20s.)—ROBERT AITKENHEAD, Estate Office, Tongwood, Hawkhurst, Kent.
 44 III. (10s.)—NORTHCOTT & SON, Holmbush, Par Station, Cornwall.
 46 R. N. & H. C.—JAMES ROGERS, Farneth, Blairgowrie.
 H. C.—42, 43. C.—41.

Class 331.—Langshan Cocks or Cockerels. [1 entries.]

- 50 I. (30s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
 52 II. (20s.) & 31 R. N. & H. C.—J. W. WALKER, Normanstead, Henley-on-Thames.
 52 III. (10s.)—A. SIMPSON, Burnley Road, Padiham, Lancs.

Class 332.—Langshan Hens or Pullets. [6 entries.]

- 58 I. (30s.) & 54 II. (20s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
 50 III. (10s.)—A. SIMPSON, Burnley Road, Padiham, Lancs.
 57 R. N. & H. C.—J. W. WALKER, Normanstead, Henley-on-Thames.
 H.C.—50. C.—55.

Class 333.—Croad Langshan Cocks or Cockerels. [15 entries.]

- 72 I. (30s.)—MRS. A. WILSON, Braithwaite, Ke-wick.
 68 II. (20s.)—MRS. H. M. GREGORY, Elloughton, Brough, E. Yorks.
 70 III. (10s.)—HERBERT P. MULLENS, The Red House, Orvington, Alresford.
 67 R. N. & H. C.—J. E. GILLOTT, 21 Edward Street, East Kirkby, Notts.
 H. C.—64. C.—61.

Class 334.—Croad Langshan Hens or Pullets. [8 entries.]

- 79 I. (30s.)—E. J. TAUNTON, Tower House, Bemerton, Salisbury.
 76 II. (20s.)—GEORGE W. CRAGG, 11 Cambridge Terrace, Otley, Yorks.
 77 III. (10s.)—H. EVES, Newent, Gloucestershire.
 75 R. N. & H. C.—EDWARD COCKER, 101 Towngate, Leyland, Lancs.
 H. C.—60. C.—82.

Class 335.—Brahma or Cochín Cocks or Cockerels. [7 entries.]

- 86 I. (30s.)—S. W. THOMAS, Glasfryn, Forest Fach, Swansea. (Dark Brahma.)
 88 II. (20s.) & 85 R. N. & H. C.—GEORGE H. PROCTER, Flass House, Durham. (Buff Cochín.)
 83 III. (10s.)—WILLIAM FOOTE, Springfield House, Armthorpe, Doncaster. (White Cochín.)
 H. C.—87. C.—89.

Class 336.—Brahma or Cochín Hens or Pullets. [5 entries.]

- 91 I. (30s.)—WILLIAM FOOTE, Springfield House, Armthorpe, Doncaster. (White Cochín.)
 92 II. (20s.)—GEORGE H. PROCTER, Flass House, Durham. (Buff Cochín.)
 93 III. (10s.)—S. W. THOMAS, Glasfryn, Forest Fach, Swansea. (Dark Brahma.)
 90 R. N. & H. C.—WALTER BRADLEY, Homelea Poultry Farm, Silsden, Yorks. (Buff Cochín.)
 H. C.—94.

Class 337.—Red Sussex Cocks. [9 entries.]

- 99 I. (30s.)—H. S. HODGES, Knowle Poultry Farm, Heathfield, Sussex.
 102 II. (20s.) & 97 III. (10s.)—A. J. FALKENSTEIN, Dallington, Sussex.
 96 R. N. & H. C.—S. F. EDGE, Gallups Homestead, Ditchling, Sussex.
 H. C.—98. C.—101.

Class 338.—Red Sussex Hens [7 entries.]

- 107 I. (30s.) & 110 III. (10s.)—A. J. FALKENSTEIN, Dallington, Sussex.
 104 II. (20s.)—JOHN ADE, Grove Hill Farm, Holmely, Sussex.
 106 R. N. & H. C.—SAUNDERSON POULTRY FARM, Bledlow Ridge, Wallingford.
 H. C.—106. C.—108.

Class 339.—Red Sussex Cockerels. [3 entries.]

- 113 I. (30s. & Champion¹)—A. J. FALKENSTEIN, Dallington, Sussex.
 112 II. (20s.)—S. F. EDGE, Gallop Homestead, Ditchling, Sussex.

Class 340.—Red Sussex Pullets. [6 entries.]

- 111 I. (30s. & R. N. for Champion¹), 117 II. (20s.) & 119 III. (10s.)—A. J. FALKENSTEIN, Dallington, Sussex.
 H. C.—116. C.—115.

¹ Special Prize given by the Sussex Poultry Club for the best Red Sussex in Class 337-340.

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Class 341.—Light Sussex Cocks. [6 entries.]

- 120 I. (30s.), 125 II. (20s.), & 123 R. N. & H. C.—THE REV. GEORGE A. CRAWSHAY, Melchbourne Vicarage, Bedfordshire.
 124 III. (10s.)—MRS. R. WILLIS, Kilham Poultry Farm, Dunblane, N.E.
 H. C.—123. C.—121.

Class 342.—Light Sussex Hens. [6 entries.]

- 151 I. (30s.), 126 II. (20s.), & 123 III. (10s.)—THE REV. GEORGE A. CRAWSHAY, Melchbourne Vicarage, Bedfordshire.
 130 R. N. & H. C.—S. F. EDGE, Gallops Homestead, Ditchling, Sussex.
 H. C.—128. C.—127.

Class 343.—Light Sussex Cockerels. [11 entries.]

- 137 I. (30s. & Champion.¹)—WILLIAM HODGES, Mountain Ash, Addlestone, Surrey.
 142 II. (20s.), 136 III. (10s.), & 140 R. N. & H. C.—H. S. HODGES, Knowle Poultry Farm, Heathfield, Sussex.
 H. C.—141. C.—138.

Class 344.—Light Sussex Pullets. [13 entries.]

- 150 I. (30s. & R. N. for Champion.¹)—WILLIAM HODGES, Mountain Ash, Addlestone, Surrey.
 148 II. (20s.)—W. J. GREEN, The Poultry Farm, Hailsham, Sussex.
 153 III. (10s.), & 151 R. N. & H. C.—THE REV. GEORGE A. CRAWSHAY, Melchbourne Vicarage, Bedfordshire.
 H. C.—145. C.—154.

Class 345.—Speckled Sussex Cocks. [10 entries.]

- 162 I. (30s. & R. N. for Champion.²)—ROBERT L. MOND, Combe Bank, near Sevenoaks.
 156 II. (20s.), & 164 III. (10s.)—JOHN BAILY & SONS, Heathfield, Sussex.
 161 R. N. & H. C.—H. JARVIS, Silverhill Poultry Farm, St. Leonard's-on-Sea.
 H. C.—159. C.—158.

Class 346.—Speckled Sussex Hens. [11 entries.]

- 172 I. (30s.)—ROBERT L. MOND, Combe Bank, near Sevenoaks.
 168 II. (20s.)—THE REV. GEORGE A. CRAWSHAY, Melchbourne Vicarage, Bedfordshire.
 173 III. (10s.)—S. F. EDGE, Gallops Homestead, Ditchling, Sussex.
 175 R. N. & H. C.—SAUNDERTON POULTRY FARM, Bledlow Ridge, Waddingford.
 H. C.—170. C.—174.

Class 347.—Speckled Sussex Cockerels. [5 entries.]

- 179 I. (30s.)—A. J. FALKENSTEIN, Dullington, Sussex.
 180 II. (20s.)—W. J. GREEN, The Poultry Farm, Hailsham, Sussex.
 178 III. (10s.)—S. F. EDGE, Gallops Homestead, Ditchling, Sussex.
 181 R. N. & H. C.—BEN S. WALES, The Willows Poultry Farm, Maxby, near York.

Class 348.—Speckled Sussex Pullets. [7 entries.]

- 186 I. (30s. & Champion.³)—WILLIAM HODGES, Mountain Ash, Addlestone, Surrey.
 188 II. (20s.), 185 III. (10s.), & 182 R. N. & H. C.—A. J. FALKENSTEIN, Dullington, Sussex.
 H. C.—183. C.—187.

Class 349.—Brown Sussex Cocks. [5 entries.]

- 193 I. (30s. & Champion.⁴), & 191 R. N. & H. C.—HOWARD BROTHERS, Hellingly Mill, Sussex.
 192 II. (20s.), & 190 III. (10s.)—JOHN ADE, Grove Hill Farm, Hellingly, Sussex.
 H. C.—189.

Class 350.—Brown Sussex Hens. [8 entries.]

- 198 I. (30s.), 195 II. (20s.), & 200 R. N. & H. C.—J. FAIRALL, JUN., Leabridge Farm, Hellingly, Sussex.
 194 III. (10s.)—JOHN ADE, Grove Hill Farm, Hellingly, Sussex.
 H. C.—197. C.—196.

Class 351.—Brown Sussex Cockerels. [5 entries.]

- 204 I. (30s.), & 206 II. (20s.)—HOWARD BROTHERS, Hellingly Mill, Sussex.
 205 III. (10s.), & 203 R. N. & H. C.—JOHN ADE, Grove Hill Farm, Hellingly, Sussex.

¹ Special Prize given by the Sussex Poultry Club for the best Light Sussex in Classes 341-344.

² Special Prize given by the Sussex Poultry Club for the best Speckled Sussex in Classes 345-348.

³ Special Prize given by the Sussex Poultry Club for the best Brown Sussex in Classes 349-352.

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- Class 352.—*Brown Sussex Pullets*. [5 entries.]
 210 I. (30s.) & R. N. for Champion.¹)—J. FAIRALL, JUN., Leabridge Farm, Hellingly, Sussex.
 211 II. (20s.) 269 III. (10s.) & 207 R. N. & H. C.—HOWARD BROTHERS, Hellingly Mill, Sussex.
 H. C.—208.
- Class 353.—*Houdan Cocks or Cockerels*. [3 entries.]
 214 I. (30s.) & 212 II. (20s.)—S. W. THOMAS, Glasfryn, Forest Fach, Swansea.
 213 III. (10s.)—NORRIS SAIR, Cottage Homes, Brynecoch, Neath.
- Class 354.—*Houdan Hens or Pullets*. [4 entries.]
 215 I. (30s.), 218 II. (20s.) & 216 III. (10s.)—S. W. THOMAS, Glasfryn, Forest Fach, Swansea.
 217 R. N. & H. C.—NORRIS SAIR, Cottage Homes, Brynecoch, Neath.
- Class 355.—*Salmon Faverolle Cocks or Cockerels*. [9 entries.]
 226 I. (30s.)—MRS. C. M. WILSON-BROWNE, The Craig, Manor Road, Sutton Coldfield.
 219 II. (20s.)—MISS S. H. BELL, Hazeldean, Lightham, Kent.
 227 III. (10s.)—MRS. R. WILLIS, Kiltane Poultry Farm, Dunblane, N.B.
 H. C.—221, 224, 225, C.—222.
- Class 356.—*Salmon Faverolle Hens or Pullets*. [8 entries.]
 231 I. (30s.)—MRS. M. A. MAY, 20 Monkbridge Road, Headingley, Leeds.
 230 II. (20s.)—H. JARVIS, Silverhill Poultry Farm, St. Leonard's-on-Sea.
 233 III. (10s.)—J. W. P. CUSONS, Gooastre, Holmes Chapel, Cheshire.
 H. C.—221, 224, 225, C.—222.
- Class 357.—*White Faverolle Cocks or Cockerels*. [5 entries.]
 237 I. (30s.)—WILLIAM FOOTE, Springfield House, Armthorpe, Doncaster.
 238 II. (20s.) & 240 III. (10s.)—WALTER SMITH, 29 Mayfield View, Wyke, Bradford.
 H. C.—239.
- Class 358.—*White Faverolle Hens or Pullets*. [4 entries.]
 242 I. (30s.)—WILLIAM FOOTE, Springfield House, Armthorpe, Doncaster.
 243 II. (20s.)—ROBERT L. MOND, Combe Bank, near Sevenoaks.
 241 III. (10s.)—C. H. BRADLEY, Tibberton, Gloucester.
 C.—244.
- Class 359.—*Maline Cocks or Cockerels*. [6 entries.]
 245 I. (30s.) & Champion.²)—WILLIAM FOOTE, Springfield House, Armthorpe, Doncaster.
 249 II. (20s.) & 247 III. (10s.)—S. W. THOMAS, Glasfryn, Forest Fach, Swansea.
 246 R. N. & H. C.—MAJOR F. HERBERT, Ty-Gwyn, Raglan, Mon.
 H. C.—250.
- Class 360.—*Maline Hens or Pullets*. [9 entries.]
 255 I. (30s.) & R. N. for Champion.³)—MRS. TERNOT, Wispington House, Cookham.
 251 II. (20s.)—WILLIAM FOOTE, Springfield House, Armthorpe, Doncaster.
 256 III. (10s.) & 258 R. N. & H. C.—S. W. THOMAS, Glasfryn, Forest Fach, Swansea.
 H. C.—252, 253, C.—257.
- Class 361.—*Campine Cocks or Cockerels*. [7 entries.]
 260 I. (30s.) & Champion.⁴) & 266 II. (20s.)—R. ANTHONY, Home Farm, Euxton, Chorley.
 262 III. (10s.)—WILLIAM FOOTE, Springfield House, Armthorpe, Doncaster.
 261 R. N. & H. C.—MAJOR MAX DE BATHE, Hartley Court, Reading.
 H. C.—263, 264, C.—265.
- Class 362.—*Campine Hens or Pullets*. [6 entries.]
 272 I. (30s.) & R. N. for Champion.⁵) & 267 R. N. & H. C.—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
 268 II. (20s.)—WILLIAM FOOTE, Springfield House, Armthorpe, Doncaster.
 268 III. (10s.)—MAJOR MAX DE BATHE, Hartley Court, Reading.
 H. C.—270, 271.
- Class 363.—*White Wyandotte Cocks*. [19 entries.]
 274 I. (30s.) & Champion.⁶)—JOHN CHIVERS, Wyehfield, Cambridge.
 273 II. (20s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
 284 III. (10s.)—HUGH GUNN, Castle Villa Poultry Farm, Gloucester.
 283 R. N. & H. C. MRS. RAMSHAW, Kirkleatham, Redcar.
 H. C.—275, 282, C.—276, 289.

¹ Special Prize given by the Sussex Poultry Club for the best Brown Sussex in Classes 349-352.

² Silver Medal given by the Malines Club for the best Maline.

³ Silver Medal given through the Campine Club for the best Campine.

⁴ Special Prize of 10s. and the "Visiting Cup" value 25 given by the White Wyandotte Club for the best White Wyandotte in Classes 363-366.

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Class 364.—White Wyandotte Hens. [12 entries.]

- 290 I. (30s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
 297 II. (20s.)—ALLAN MOSS, Charnwood Poultry Farm, Shepshed, near Loughborough.
 291 III. (10s.)—JOHN CHIVERS, Wychfield, Cambridge.
 298 R. N. & H. C.—MRS. RAMSHAW, Kirkleatham, Redcar.
 H. C.—299. C.—290, 300, 301.

Class 365.—White Wyandotte Cockerels. [15 entries.]

- 310 I. (30s.) & 314 R. N. & H. C.—MRS. RAMSHAW, Kirkleatham, Redcar.
 311 II. (20s.)—JOHN SMITH, Lane Ends Farm, Hother-sall, Longridge, near Preston.
 303 III. (10s.)—JOHN CHIVERS, Wychfield, Cambridge.
 H. C.—308. C.—302, 307.

Class 366.—White Wyandotte Pullets. [17 entries.]

- 318 I. (30s.) & R. N. for Champion.¹⁾—WALTER BRADLEY, Homelea Poultry Farm, Silsden, Yorks.
 327 II. (20s.)—MRS. RAMSHAW, Kirkleatham, Redcar.
 324 III. (10s.)—ALBERT HAYNES, Hill Crest Poultry Farm, Wombwell, Yorks.
 325 R. N. & H. C.—C. N. GOODE The Haydens, Blisset, B. & F.
 H. C.—320, 323. C.—323, 329, 330, 332.

Class 367.—Black Wyandotte Cocks. [12 entries.]

- 335 I. (30s.) & R. N. for Champion.²⁾—T. J. ALTY, Vine Cottage, Pilling, Garstang.
 336 II. (20s.)—T. C. HEATH, Keele, Newcastle, Staffs.
 334 III. (10s.)—W. R. ABBEY, Croft Farm, Hessay, York.
 331 R. N. & H. C.—WILLIAM ROBERTSON, Becklands, Blackford, near Carlisle.
 H. C.—337, 342, 345. C.—344.

Class 368.—Black Wyandotte Hens. [15 entries.]

- 351 I. (30s.) & Champion.³⁾—HERBERT GARLICK, Kirkby Lonsdale.
 360 II. (20s.)—T. C. HEATH, Keele, Newcastle, Staffs.
 352 III. (10s.)—ROGER HARGREAVES, Banks Farm, Whalley, Lancs.
 346 R. N. & H. C.—W. R. ABBEY, Croft Farm, Hessay, York.
 H. C.—354, 357, 359. C.—348, 353, 355.

Class 369.—Black Wyandotte Cockerels. [5 entries.]

- 364 I. (30s.)—THOMAS SIDDON, Thringstone, Leicester.
 365 II. (20s.)—ALFRED BIRCH, Edge Farm, Setton, via Seaforth, Liverpool.
 362 III. (10s.)—WILLIAM A. CARR, Overgreen, Westhouse, Ingleton, Yorks.
 363 R. N. & H. C.—FAWCETT BROTHERS, Ireby Hall, Kirkby Lonsdale.

Class 370.—Black Wyandotte Pullets. [7 entries.]

- 366 I. (30s.)—W. R. ABBEY, Croft Farm, Hessay, York.
 370 II. (20s.)—ROGER HARGREAVES, Banks Farm, Whalley, Lancs.
 371 III. (10s.)—JOHN W. TITTERINGTON, Nook Cottage, Kirkland, near Garstang.
 372 R. N. & H. C.—ALFRED BIRCH, Edge Farm, Setton, via Seaforth, Liverpool.
 H. C.—367. C.—369.

Class 371.—Gold or Silver Laced Wyandotte Cocks or Cockerels. [10 entries.]

- 380 I. (30s.) & 371 II. (20s.)—W. H. SMITH & SON, Peets Farm, Southport.
 375 III. (10s.)—JOHN GREENWOOD, Old White Bear, Crosshills, Knaresborough.
 381 R. N. & H. C.—HERBERT SPENSLEY, Oaks Farm, Menston, via Leeds.
 H. C.—378, 379. C.—373, 376.

Class 372.—Gold or Silver Laced Wyandotte Hens or Pullets. [7 entries.]

- 383 I. (30s.)—TOM H. FURNESS, Carlton House, Chesterfield.
 384 II. (20s.)—HERBERT SPENSLEY, Oaks Farm, Menston, via Leeds.
 384 III. (10s.)—THOMAS LOCKWOOD, The Woodlands, Cateley Bridge, Yorks.
 386 R. N. & H. C.—W. H. SMITH & SON, Peets Farm, Southport.
 H. C.—385, 387. C.—388.

Class 373.—Partridge Wyandotte Cocks or Cockerels. [7 entries.]

- 392 I. (30s.) & Champion.⁴⁾, 394 III. (10s.) & 396 R. N. & H. C.—RICHARD WATSON, Thorn Garth Poultry Farm, Thuckley, Bradford.
 390 II. (20s.)—J. G. MORTEN, Pentrich, Derby.
 H. C.—393, 395. C.—391.

¹⁾ Special Prize of 10s. and the "Visiting Cup" value £5 given by the White Wyandotte Club for the best White Wyandotte in Classes 363-366.

²⁾ Special Prize of 10s. given by the Black Wyandotte Club for the best Black Wyandotte in Classes 367-370.

³⁾ Special Prize given by the Partridge Wyandotte Club for the best Partridge Wyandotte in Classes 373 and 374.

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Class 374.—Partridge Wyandotte Hens or Pullets. [2 entries.]

- 398 I. (30s.) & R. N. for Champion.¹⁾—HUGH GUNN, Castle Villa Poultry Farm, Gloucester.
397 II. (20s.)—MRS. C. N. ALEXANDER, Stockwell House Poultry Farm, Knaresborough.

Class 375.—Columbian Wyandotte Cocks or Cockerels. [5 entries.]

- 401 I. (30s.) & 403 R. N. & H. C.—L. H. WACE, Kingsland Lodge, Beaumister, Dorset.
399 II. (20s.)—WILLIAM HODGES, Mountain Ash, Addlestone, Surrey.
400 III. (10s.)—JOHN T. KITCHEN, Sileby Road, Barrow-on-Soar.

Class 376.—Columbian Wyandotte Hens or Pullets. [4 entries.]

- 407 I. (30s.)—W. C. YEOMAN, Marsden Hall, Nelson, Lancs.
404 II. (20s.)—W. A. BEAL, 19 Cambridge Drive, Crosby, Liverpool.
406 III. (10s.)—WILLIAM HODGES, Mountain Ash, Addlestone, Surrey.
405 R. N. & H. C.—J. R. COATES, Dalry, Manchester Road, Wilmslow.

Class 377.—Blue Wyandotte Cocks or Cockerels. [10 entries.]

- 413 I. (30s.)—F. P. LIGHTFOOT, Inglewood Lodge, Great Barr, Birmingham.
412 II. (20s.)—MRS. W. HOLDSWORTH, St. Jude's Road West, Wolverhampton.
415 III. (10s.)—JAMES WALLBANK, Belmont, Longridge, near Preston.
416 R. N. & H. C.—G. L. WATKINS, The Laurels, Caerphilly, via Cardiff.
H. C.—417. O.—408.

Class 378.—Blue Wyandotte Hens or Pullets. [10 entries.]

- 420 I. (30s.) & 426 II. (20s.)—MRS. W. HOLDSWORTH, St. Jude's Road West, Wolverhampton.
424 III. (10s.)—JAMES WALLBANK, Belmont, Longridge, near Preston.
425 R. N. & H. C.—G. L. WATKINS, The Laurels, Caerphilly, via Cardiff.
H. C.—419, 422, 427. O.—421, 423.

Class 379.—Wyandotte Cocks or Cockerels, any other variety. [12 entries.]

- 438 I. (30s.) & 432 II. (20s.)—MICHAEL HARRISON, Shaw House, Heads Nook, Carlisle.
430 III. (10s.)—W. H. BREWER, Uzella Poultry Farm, Lostwithiel.
428 R. N. & H. C.—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
H. C.—434, 437, 438. C.—429.

Class 380.—Wyandotte Hens or Pullets, any other variety. [11 entries.]

- 450 I. (30s.) & 444 R. N. & H. C.—MICHAEL HARRISON, Shaw House, Heads Nook, Carlisle.
440 II. (20s.)—W. H. BREWER, Uzella Poultry Farm, Lostwithiel.
441 III. (10s.)—W. L. ARCHER, Ashwell's Farm, Chalfont St. Giles, Bucks.
H. C.—445, 446. C.—440, 447.

Class 381.—Buff Orpington Cocks. [21 entries.]

- 451 I. (30s.) & R. N. for Champion.²⁾—ROBERT L. MOND, Combe Bank, near Sevenoaks.
450 II. (20s.)—TOM H. FIDNESS, Carlton House, Chesterfield.
455 III. (10s.)—JOHN CHIVERS, Wychfield, Cambridge.
467 R. N. & H. C.—MURRAY LINDNER, Ham Court Poultry Farm, Charlton Kings, Cheltenham.
H. C.—464. C.—468.

Class 382.—Buff Orpington Hens. [8 entries.]

- 477 I. (30s.) & 479 II. (20s.)—ROBERT L. MOND, Combe Bank, near Sevenoaks.
472 III. (10s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
473 R. N. & H. C.—WILLIAM H. COOK, LTD., Poultry Breeders, Orpington, Kent.

Class 383.—Buff Orpington Cockerels. [12 entries.]

- 486 I. (30s.)—F. M. ROGERS, Stoford Poultry Farm, West Buckland, Wellington, Som.
481 II. (20s.)—W. J. GOLDING, Westwood Farm, Weald, Kent.
483 III. (10s.) & 485 R. N. & H. C.—ROBERT L. MOND, Combe Bank, near Sevenoaks.
H. C.—487, 491. C.—482.

Class 384.—Buff Orpington Pullets. [12 entries.]

- 492 I. (30s.) & Champion.³⁾—JOHN CHIVERS, Wychfield, Cambridge.
496 II. (20s.), 501 III. (10s.) & 503 R. N. & H. C.—ROBERT L. MOND, Combe Bank, near Sevenoaks.
H. C.—494, 498. C.—495, 500.

¹ Special Prize given by the Partridge Wyandotte Club for the best Partridge Wyandotte in Classes 374 and 375.

² A Piece of Plate given by the Buff Orpington Club for the best Buff Orpington in Classes 381-384.

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Class 385.—White Orpington Cocks. [4 entries.]

- 504 I. (30s.) & 507 II. (20s.)—MURRAY LINDNER, Ham Court Poultry Farm, Charlton Kings, Cheltenham.
 505 III. (10s.)—W. F. MACGIBBON, Burnside, Rolleston-on-Dove, Burton-on-Trent.

Class 386.—White Orpington Hens. [18 entries.]

- 506 I. (30s.)—W. M. BELL, St. Leonard's Poultry Farm, Ringwood, Hants.
 515 II. (20s.)—WILLIAM FOOTE, Springfield House, Arunthorpe, Doncaster.
 520 III. (10s.)—W. F. MACGIBBON, Burnside, Rolleston-on-Dove, Burton-on-Trent.
 523 R. N. & H. C.—MAJOR H. WATTS, Brookdale, Alderley Edge, Cheshire.
 H. C.—516, 521. C.—517.

Class 387.—White Orpington Cockerels. [6 entries.]

- 530 I. (30s. & Champion.¹)—ROBERT L. MOND, Combe Bank, near Sevenoaks.
 528 II. (20s. & R. N. for Champion.¹)—WILLIAM FOOTE, Springfield House, Arunthorpe, Doncaster.
 527 III. (10s.)—LADY FITZGERALD, Buckland Poultry Farm, Faringdon, Berks.
 531 R. N. & H. C.—C. W. WASHINGTON, Dringhoe Poultry Farm, Bedford, near Driftfield.

Class 388.—White Orpington Pullets. [5 entries.]

- 536 I. (30s. & Champion.²)—W. F. MACGIBBON, Burnside, Rolleston-on-Dove, Burton-on-Trent.
 535 II. (20s. & R. N. for Champion.²)—WILLIAM FOOTE, Springfield House, Arunthorpe, Doncaster.
 532 III. (10s.)—W. M. BELL, St. Leonard's Poultry Farm, Ringwood, Hants.
 534 R. N. & H. C.—LADY FITZGERALD, Buckland Poultry Farm, Faringdon, Berks.

Class 389.—Black Orpington Cocks. [23 entries.]

- 539 I. (30s. & Champion.³)—W. M. BELL, St. Leonard's Poultry Farm, Ringwood.
 547 II. (20s.)—T. J. DAVIES, Maesyderi, Abercraze, Breconshire.
 542 III. (10s.)—J. BROOKS, Brook House, Irlam, Manchester.
 552 R. N. & H. C.—J. G. SHANKS, Stetchworth, Newmarket.
 H. C.—544, 552, 555. C.—548, 558, 559.

Class 390.—Black Orpington Hens. [16 entries.]

- 565 I. (30s.)—WILLIAM H. COOK, LTD., Poultry Breeders, Orpington, Kent.
 574 II. (20s.)—THOMAS HOYLE BOSVILLE, Leyburn Hall, Leyburn, S.O., Yorks.
 568 III. (10s.)—THOMAS HOYLE, Savile Road, Halifax.
 571 R. N. & H. C.—E. SCARISBRICK, Greaves Hall Poultry Farm, Banks, Lancs.
 H. C.—562, 569. C.—568, 570.

Class 391.—Black Orpington Cockerels. [4 entries.]

- 570 I. (30s. & R. N. for Champion.⁴)—LESLIE H. BACCHUS, Brooklyn Poultry Farm, Ifield, Crawley, Sussex.
 578 II. (20s.)—J. PIGGOTT, The Folly, Haddenham, Bucks.
 577 III. (10s.)—W. M. BELL, St. Leonard's Poultry Farm, Ringwood, Hants.
 578 R. N. & H. C.—THOMAS HOYLE, Savile Road, Halifax.

Class 392.—Black Orpington Pullets. [3 entries.]

- 582 I. (30s.)—JOHNS BROTHERS, Trentinney Farm, St. Endellion, Cornwall.
 590 II. (20s.)—W. M. BELL, St. Leonard's Poultry Farm, Ringwood, Hants.
 591 III. (10s.)—TOM H. FURNESS, Carlton House, Chesterfield.

Class 393.—Blue Orpington Cocks or Cockerels. [17 entries.]

- 590 I. (30s. & Champion.⁵) & 596 II. (20s. & R. N. for Champion.⁵)—MAJOR MAX DE BATHE, Hartley Court, Reading.
 594 III. (10s.) & 588 R. N. & H. C.—HAROLD CORRIE, Quobleigh, Eastleigh, Hants.
 H. C.—584, 589. C.—591, 593.

Class 394.—Blue Orpington Hens or Pullets. [9 entries.]

- 601 I. (30s. & Champion.⁶) & 606 III. (10s.)—MAJOR MAX DE BATHE, Hartley Court, Reading.
 600 II. (20s. & R. N. for Champion.⁶)—T. J. DAVIES, Maesyderi, Abercraze, Breconshire.
 604 R. N. & H. C.—ROBERT L. MOND, Combe Bank, near Sevenoaks.
 H. C.—602. C.—599.

¹ Silver Service Ring given by the White Orpington Club for the best White Orpington Cockerel in Class 387.

² Silver Service Ring given by the White Orpington Club for the best White Orpington Pullet in Class 388.

³ Special Prize of 10s. given by the Black Orpington Club for the best Black Orpington in Classes 389-392.

⁴ Special Prize of 10s. given by the Blue Orpington Club for the best Blue Orpington Cockerel in Class 393.

⁵ Special Prize of 10s. given by the Blue Orpington Club for the best Blue Orpington Hen or Pullet in Class 394.

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Class 395.—Spangled Orpington Cocks or Cockerels. [5 entries.]

- 608 I. (30s., & Champion.¹)—**LESLIE H. BACCHUS**, Brooklyn Poultry Farm, Ifield, Crawley, Su-sex.
 611 II. (20s.)—**WILLIAM H. COOK LTD.**, Poultry Breeders, Orpington, Kent.
 607 III. (10s.) & 610 **R. N. & H. C.**—**WILLIAM COOK & SONS**, Orpington House, St. Mary Cray, Kent.
 C.—608.

Class 396.—Spangled Orpington Hens or Pullets. [4 entries.]

- 612 I. (30s., & R. N. for Champion.¹) & 615 III. (10s.)—**LESLIE H. BACCHUS**, Brooklyn Poultry Farm, Ifield, Crawley, Sussex.
 614 II. (20s.)—**WILLIAM COOK & SONS**, Orpington House, St. Mary Cray, Kent.
 613 **R. N. & H. C.**—**LAWRENCE BOOTH**, Dingle Bank, Chester.

Class 397.—Orpington Cocks or Cockerels, any other colour. [6 entries.]

- 618 I. (30s.) & 621 II. (20s.)—**WILLIAM COOK & SONS**, Orpington House, St. Mary Cray.
 620 III. (10s.)—**SAUNDERTON POULTRY FARM**, Blecklow Ridge, Walsingford, Bucks.
 H. C.—619. C.—618.

Class 398.—Orpington Hens or Pullets, any other colour. [2 entries.]

- 622 I. (30s.)—**WILLIAM COOK & SONS**, Orpington House, St. Mary Cray, Kent.

Class 399.—British Rhode Island Red Cocks. [37 entries.]

- 628 I. (30s., & Champion.²)—**MRS. CHRISTINE COLBECK**, Boyle Hall, Wakefield.
 635 II. (20s.)—**JOSEPH H. HEAP**, Commercial Hotel, Wheelock, Sandbach.
 632 III. (10s.)—**MRS. W. B. GOODE**, Aldborough Lodge, Boroughbridge, Yorks.
 647 **R. N. & H. C.**—**L. SIDSON**, Waterworks Road, Workson.
 H. C.—624, 625, 629, 637, 639, 641. C.—626, 640, 644, 648, 650, 654, 656, 657.

Class 400.—British Rhode Island Red Hens. [16 entries.]

- 675 I. (30s., & R. N. for Champion.²) & 682 **R. N. & H. C.**—**MRS. CHRISTINE COLBECK**, Boyle Hall, Wakefield.
 684 II. (20s.)—**V. F. MACGILLIBON**, Burnside, Rolleston-on-Dove, Burton-on-Trent.
 686 III. (10s.)—**THOMAS & JONES**, Daunton Poultry Yards, Trebarris, Glam.
 H. C.—685, 686, 673. C.—676.

Class 401.—British Rhode Island Red Cockerels. [14 entries.]

- 678 I. (30s.)—**MISS F. CHAMPION**, Heather Hall, Ashby-de-la-Zouch.
 685 II. (20s.)—**TOM A. SCOTT & CO.**, The Trenches, Middle Green, Slough.
 687 III. (10s.)—**JAMES STIRLING**, Mossgrove, Bridge-of-Adan, N.B.
 688 **R. N. & H. C.**—**JOHN WILLIAMSON**, Park House, Knaresborough.
 H. C.—684, 689. C.—679.

Class 402.—British Rhode Island Red Pullets. [22 entries.]

- 696 I. (30s.)—**DYSON & SYKES**, Brookholes, Huddersfield.
 709 II. (20s.)—**MRS. CHRISTINE COLBECK**, Boyle Hall, Wakefield.
 708 III. (10s.)—**HARRY TURPIN**, Nesfield, West Hallam, Derby.
 691 **R. N. & H. C.**—**W. R. ARBEY**, Croft Farm, Hessay, York.
 H. C.—693, 697. C.—695, 712.

Class 403.—Old English Game Black-Red Cocks. [12 entries.]

- 715 I. (30s.)—**T. C. HEATH**, Keele, Newcastle, Staffs.
 713 II. (20s.)—**J. T. DODD**, The Wath Farm, Silloth, Cumberland.
 716 III. (10s.)—**THOMAS HUGHES**, Brynteg Crynant, Neath.
 718 **R. N. & H. C.**—**R. S. MARSDEN**, Pendle Hotel, Clatburn, Clitheroe.
 H. C.—714, 720, 724. C.—722, 723.

Class 404.—Old English Game Clay or Wheaten Hens. [8 entries.]

- 727 I. (30s.)—**R. S. MARSDEN**, Pendle Hotel, Clatburn, Clitheroe.
 726 II. (20s.)—**T. C. HEATH**, Keele, Newcastle, Staffs.
 731 III. (10s.)—**WALTER FIRTH**, Read, Blackburn.
 728 **R. N. & H. C.**—**THOMAS WILSON**, Royal Oak, Bowness-on-Windermere.
 H. C.—725, 729. C.—732.

Class 405.—Old English Game Cocks, any other colour. [13 entries.]

- 745 I. (30s.)—**WALTER FIRTH**, Read, Blackburn.
 738 II. (20s.)—**THOMAS HUGHES**, Brynteg Crynant, Neath.
 735 III. (10s.)—**T. J. DAVIES**, Maesyderi, Abercave, Breconshire.
 742 **R. N. & H. C.**—**ROBERT SLADING**, St. John's Nurseries, Barkerhouse Road, Nels-
 H. C.—734, 736, 743. C.—733, 740.

¹ Special Prize given by the Spangled Orpington Club for the best Spangled Orpington in Classes 395 and 396.

² Silver Spoon given by the British Rhode Island Red Club for the best British Rhode Island Red.

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Class 406.—Old English Game Hens, any other colour. [9 entries.]

- 748 I. (30s.)—T. C. HEATH, Keele, Newcastle, Staffs.
 754 II. (20s.) & 747 R. N. & H. C.—WALTER FIRTH, Read, Blackburn.
 751 III. (10s.)—R. S. MARSDEN, Pendle Hotel, Chatburn, Clitheroe.
 H. C.—752, 753. C.—746.

Class 407.—Old English Game Cockerels, any colour. [4 entries.]

- 756 I. (30s.)—R. S. MARSDEN, Pendle Hotel, Chatburn, Clitheroe.
 757 II. (20s.)—THOMAS WILSON, Royal Oak, Bowness-on-Windermere.
 758 III. (10s.) & 755 R. N. & H. C.—PHILIP HINDE, JUN., Sandiway, Northwich.

Class 408.—Old English Game Pullets, any colour. [4 entries.]

- 759 I. (30s.)—R. S. MARSDEN, Pendle Hotel, Chatburn, Clitheroe.
 760 II. (20s.)—THOMAS WILSON, Royal Oak, Bowness-on-Windermere.
 763 III. (10s.)—DR. EDGAR TAYLOR, 1 Ward Street, Longtown, Cumberland.

Class 409.—Indian Game Cocks or Cockerels. [14 entries.]

- 764 I. (30s.)—J. H. BAKER & SONS, The Forge, Barnstaple.
 772 II. (20s.)—WILLIAM G. KINGWELL, Dartmoor Poultry Farm, South Brent.
 779 III. (10s.)—WALTER FIRTH, Read, Blackburn.
 768 R. N. & H. C.—ALBERT E. DARK, Landerdale, Barnstaple.
 H. C.—775, 776. C.—766, 771.

Class 410.—Indian Game Hens or Pullets. [11 entries.]

- 778 I. (30s.)—J. H. BAKER & SONS, The Forge, Barnstaple.
 780 II. (20s.)—WILLIAM BRENT, Clampt, Collington, Cornwall.
 782 III. (10s.)—WALTER FIRTH, Read, Blackburn.
 783 R. N. & H. C.—W. & J. H. HEYS, Stone Croft, Ledwith Green, Northwich.
 H. C.—786. C.—777, 787.

Class 411.—Modern Game Cocks or Cockerels, any colour. [6 entries.]

- 793 I. (30s.) & 790 III. (10s.)—WILLIAM GARNE, Abington, Fairford, Gloucestershire.
 793 II. (20s.) & 789 R. N. & H. C.—WALTER FIRTH, Read, Blackburn.
 H. C.—789, 791.

Class 412.—Modern Game Hens or Pullets, any colour. [6 entries.]

- 794 I. (30s.) & 798 II. (20s.)—WALTER FIRTH, Read, Blackburn.
 795 III. (10s.)—WILLIAM GARNE, Abington, Fairford, Gloucestershire.
 797 R. N. & H. C.—DAVID WISHART, The Ferry, Chatteris, Cambs.
 H. C.—796.

Class 413.—Black Sumatra Game Cocks or Cockerels. [8 entries.]

- 800 I. (30s.) & 897 R. N. & H. C.—F. R. EATON, Cleveland House, Eaton, Norwich.
 806 II. (20s.)—F. W. S. SPARROW, West Moors near Wimborne.
 802 III. (10s.)—R. S. MARSDEN, Pendle Hotel, Chatburn, Clitheroe.
 H. C.—801, 803, 804. C.—805.

Class 414.—Black Sumatra Game Hens or Pullets. [6 entries.]

- 811 I. (30s.)—R. S. MARSDEN, Pendle Hotel, Chatburn, Clitheroe.
 808 II. (20s.)—DAVID B. CHESTERFIELD, Rock House, Glynneth, Glamorgan.
 813 III. (10s.)—FREDERICK R. EATON, Cleveland House, Eaton, Norwich.
 812 R. N. & H. C.—FREDERICK W. MYHILL, The Red House, Hethel, Norwich.
 H. C.—809, 810.

Class 415.—Minorca Cocks or Cockerels. [7 entries.]

- 830 I. (30s.) & 814 II. (20s.)—WALTER BRADLEY, Homeda Poultry Farm, Sliden, Yorks.
 810 III. (10s.)—FURSLAND BROTHERS, Bridgwater, Somerset.
 817 R. N. & H. C.—ARTHUR G. PITTS, "Talisia," Barnham, Somerset.
 H. C.—819. C.—815.

Class 416.—Minorca Hens or Pullets. [20 entries.]

- 822 I. (30s.) & 838 II. (20s.)—WALTER BRADLEY, Homeda Poultry Farm, Sliden, Yorks.
 828 III. (10s.)—E. J. NAISH, 95 Pembroke Road, Seven Kings, Ilford.
 824 R. N. & H. C.—GEORGE CLEAVES, The Oaks, Snatchwood, Abersychan, Mon.
 H. C.—836. C.—825.

Class 417.—White Leghorn Cocks or Cockerels. [8 entries.]

- 843 I. (30s.)—LUTHER SLACK, Litchfield House, Nottingham Road, Mansfield.
 841 II. (20s.)—WALTER BRADLEY, Homeda Poultry Farm, Sliden, Yorks.
 842 III. (10s.)—B. MOSS, Lindow Terrace, Alderley Edge, Cheshire.

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Class 418.—White Leghorn Hens or Pullets. [6 entries.]

- 844 I. (30s.)—WALTER BRADLEY, Homelea Poultry Farm, Silsden, Yorks.
 845 II. (20s.)—JOSEPH BARDWICK, 170 Oversetts Road, Newhall, Burton-on-Trent.
 847 III. (10s.) & 849 R. N. & H. C.—LUTHER SLACK, Litchfield House, Nottingham Road, Mansfield.
 H. C.—846.

Class 419.—Brown Leghorn Cocks or Cockerels. [4 entries.]

- 850 I. (30s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
 858 II. (20s.)—ERNEST LL. SIMON, Pembroke.
 831 III. (10s.)—WALTER BRADLEY, Homelea Poultry Farm, Silsden, Yorks.

Class 420.—Brown Leghorn Hens or Pullets. [8 entries.]

- 850 I. (30s.)—N. ROSSALL, South Marl Pit's Farm, Wheelton, near Chorley.
 856 II. (20s.)—E. DENYER, 93 Walton Road, Molesey, Surrey.
 861 III. (10s.) & 858 R. N. & H. C.—J. J. RAWSON, Westholme, London Road, Kettering.
 H. C.—857. C.—855.

Class 421.—Black Leghorn Cocks or Cockerels. [2 entries.]

- 862 I. (30s.)—ARTHUR H. CATCHPOLE, Gate House, Framlingham, Suffolk.
 863 II. (20s.)—RICHARD RODWELL, 53 Yale Street, Nelson.

Class 422.—Black Leghorn Hens or Pullets. [11 entries.]

- 867 I. (30s.)—JOHN HURST, South Terrace, Glossop.
 873 II. (20s.)—WALTER HURST, 8 High Street, East Glossop.
 870 III. (10s.)—THOMAS S. MANN, Church Lane, Bagthorpe, Jacksdale, Notts.
 869 R. N. & H. C.—HARRY S. KING, Gallow House, Otley, Yorks.
 H. C.—871. C.—872.

Class 423.—Leghorn Cocks or Cockerels, any other colour. [4 entries.]

- 875 I. (30s.)—ERNEST LL. SIMON, Pembroke.
 876 II. (20s.)—C. N. ALEXANDER, Stockwell House Poultry Farm, Knarborough.
 878 III. (10s.)—WILLIAM STRAW, 19 Heanor Road, Ilkeston.
 877 R. N. & H. C.—JOHN WHITE, 15 Clarence Street, Plesley Hill, Mansfield.

Class 424.—Leghorn Hens or Pullets, any other colour. [4 entries.]

- 882 I. (30s.)—WILLIAM STRAW, 19 Heanor Road, Ilkeston.
 879 II. (20s.)—C. N. ALEXANDER, Stockwell House Poultry Farm, Knarborough.
 880 III. (10s.)—MRS. A. J. PAIN, Heath Park House, Leighton Buzzard.
 881 R. N. & H. C.—RICHARD WATSON, 4 Bank, Barnard Castle.

Class 425.—Sicilian Buttercup Cocks or Cockerels. [17 entries.]

- 886 I. (30s. & Champion*)—MRS. CHRISTINE COLBROCK, Boyle Hall, Wakefield.
 893 II. (20s. & R. N. for Champion*)—MRS. A. WILSON, Braithwaite, Keswick.
 883 III. (10s.)—JAMES CHAMBERS, Elstree House, Nutfield Road, Redhill, Surrey.
 890 R. N. & H. C.—JOHN RICHARDSON, Sowerby Grange, Northallerton.
 H. C.—892. C.—889.

Class 426.—Sicilian Buttercup Hens or Pullets. [16 entries.]

- 904 I. (30s. & Champion*)—MRS. CECILIA J. EVANS, Court of Noke, Pembridge.
 901 II. (20s. & R. N. for Champion*)—MISS F. CHAMPION, Heather Hall, Ashby-de-la-Zouch.
 914 III. (10s.)—MRS. CHRISTINE COLBROCK, Boyle Hall, Wakefield.
 900 R. N. & H. C.—JAMES CHAMBERS, Elstree House, Nutfield Road, Redhill, Surrey.
 H. C.—903. C.—906.

Class 427.—Barred Plymouth Rock Cocks. [13 entries.]

- 925 I. (30s. & R. N. for Champion*)—G. V. SCOTT, Kirkburton, near Huddersfield.
 920 II. (20s.)—DR. F. S. JACKSON, Robin Hill, Cornforth.
 919 III. (10s.)—GEORGE F. GUSH, Thackham, Winchfield, Hants.
 927 R. N. & H. C.—W. SWARBRICK, Shaw Farm, Longridge.
 H. C.—918, 924. C.—917, 923.

Class 428.—Barred Plymouth Rock Hens. [12 entries.]

- 933 I. (30s. & Champion*)—SYDNEY LAKE, Hayewden, Tonbridge, Kent.
 940 II. (20s. & 930 R. N. & H. C.)—R. GARLICK, Kirkby Lonsdale.
 938 III. (10s.)—W. SWARBRICK, Shaw Farm, Longridge.
 H. C.—935. C.—932.

* Special Prize given by the International Buttercup Club for the best Cock or Cockerel in Class 425.

* Special Prize given by the International Buttercup Club for the best Hen or Pullet in Class 426.

* Special Prize given by the Barred Plymouth Rock Club for the best Barred Plymouth Rock in Classes 427-428.

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Class 429.—Barred Plymouth Rock Cockerels. [11 entries.]

- 943 I. (30s.)—JOHN GORST, Craven Heifer Hotel, Chagley, Clitheroe.
 944 II. (20s.)—EDWARD BILLINGTON, 18 Garstang Road, Wesham, Lancs.
 947 III. (10s.)—DR. E. S. JACKSON, Robin Hill, Carnforth.
 950 E. N. & H. C.—A. E. WELLS, Wicken Hall Poultry Farm, Newport, Essex.
 H. C.—942, 945, 948. C.—944.

Class 430.—Barred Plymouth Rock Pullets. [9 entries.]

- 955 I. (30s.)—DR. E. S. JACKSON, Robin Hill, Carnforth.
 956 II. (20s.)—E. MARSHALL, Lenton, Nottingham.
 952 III. (10s.)—EDWARD BILLINGTON, 18 Garstang Road, Wesham, Lancs.
 953 E. N. & H. C.—GEORGE E. GUSH, Thackham, Winchfield, Hants.
 H. C.—957.

Class 431.—Buff Plymouth Rock Cocks or Cockerels. [15 entries.]

- 970 I. (30s. & Champion.¹)—WILLIAM D. MAYCOCK, 307 St. Benedict's Road, Small Heath, Birmingham.
 981 II. (20s.)—JAMES BATEMAN, Mithorpe, Westmorland.
 968 III. (10s.)—DR. E. S. JACKSON, Robin Hill, Carnforth.
 964 E. N. & H. C.—JOHN GORST, Craven Heifer Hotel, Chagley, Clitheroe.
 H. C.—963, 965. C.—467, 972, 975.

Class 432.—Buff Plymouth Rock Hens or Pullets. [8 entries.]

- 982 I. (30s. & E. N. for Champion.¹), & 979 III. (10s.) HERBERT SPENSLEY, Oak Farm, Menston, via Leeds.
 980 II. (20s.)—J. T. STINCHCOMBE, 35 Butli Road, Luton.
 977 E. N. & H. C.—DR. R. S. JACKSON, Robin Hill, Carnforth.

Class 433.—White Plymouth Rock Cocks or Cockerels. [4 entries.]

- 984 I. (30s.)—WILLIAM FOOTE, Springfield House, Armthorpe, Doncaster.
 987 II. (20s.)—MRS. R. WILLIS, Kiltane Poultry Farm, Dunblane, N.B.
 986 III. (10s.)—A. E. WELLS, Wicken Hall Poultry Farm, Newport, Essex.
 985 E. N. & H. C.—GEORGE E. GUSH, Thackham, Winchfield, Hants.

Class 434.—White Plymouth Rock Hens or Pullets. [3 entries.]

- 988 I. (30s.)—WILLIAM FOOTE, Springfield House, Armthorpe, Doncaster.
 989 II. (20s.)—MRS. R. WILLIS, Kiltane Poultry Farm, Dunblane, N.B.
 990 III. (10s.)—E. H. THOMAS, Clifton Villa, Queen's Head, Westleton, Oswestry.

Class 435.—Plymouth Rock Cocks or Cockerels, any other colour. [4 entries.]

- 992 I. (30s.)—FAWCETT BROTHERS, Ireby Hall, Kirkby Lonsdale.
 984 II. (20s.)—A. T. MITTON, Turton, Bolton.
 991 III. (10s.)—P. W. DEAN, Woodhouse, Biddulph, Staffs.
 983 E. N. & H. C.—THOMAS W. GIBSON, Arkholme, Kirkby Lonsdale.

Class 436.—Plymouth Rock Hens or Pullets, any other colour. [6 entries.]

- 996 I. (30s.)—JAMES BATEMAN, Mithorpe, Westmorland.
 993 II. (20s.)—R. THOMPSON, The Lodge, Arnside, y/a Carnforth.
 997 III. (10s.)—JAMES A. BRANDWOOD, Pleasant View, Edgworth, Bolton, Lancs.
 985 E. N. & H. C.—W. L. ARCHER, Ashwell's Farm, Chalfont St. Giles, Bucks.
 H. C.—998. C.—1000.

Class 437.—Scots Dumpy Cocks or Cockerels. [6 entries.]

- 1001 I. (30s. & Champion.²), & 1005 II. (20s.)—JOHN MAJOR, Ditton, Langley, Bucks.
 1006 III. (10s.)—JOHN CRAIG, Fauldside Cottage, Dreghorn, Ayrshire.
 1004 E. N. & H. C.—J. E. KERR, Harviestoun Castle, Dollar.
 H. C.—1003. C.—1002.

Class 438.—Scots Dumpy Hens or Pullets. [8 entries.]

- 1007 I. (30s. & E. N. for Champion.²)—JAMES W. BROWN, Skellyton Farm, Larkhall, Lanarkshire.
 1012 II. (20s.) & 1011 III. (10s.)—JOHN MAJOR, Ditton, Langley, Bucks.
 1008 E. N. & H. C.—JOHN CRAIG, Fauldside Cottage, Dreghorn, Ayrshire.
 H. C.—1012, 1014. C.—1010.

¹ Special Prize given by the Buff Plymouth Rock Club for the best Buff Plymouth Rock in Classes 431 and 432.

² Special Prize of 10s. 6d. given by a Member of the R.A.S.E. for the best Scots Dumpy.

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Class 439.—*Anyona Cocks or Cockerels.* [3 entries.]

- 1017 I. (30s.)—MR. & MRS. ERIC F. HURT, South Darley, Matlock.
1018 II. (20s.)—JAMES H. HEAP, Bay Horse Hotel, Worsthorne, Burnley.
1019 III. (10s.)—J. H. FULLER, Marsden Square, Haslingden, Lancs.

Class 440.—*Anyona Hens or Pullets.* [3 entries.]

- 1019 I. (30s.)—MR. & MRS. ERIC F. HURT, South Darley, Matlock.
1020 II. (20s.)—MRS. SHORTT, Southwick Rectory, Sunderland.
1018 III. (10s.)—JAMES H. HEAP, Bay Horse Hotel, Worsthorne, Burnley.

Class 441.—*Yokohama Cocks or Cockerels.* [9 entries.]

- 1021 I. (30s. & Champion¹), & 1027 III. (10s.)—R. SCOTT MILLER, Greenoak Hill, Broomhouse, near Glasgow.
1022 II. (20s.)—ROBERT L. MOND, Combe Bank, near Sevenoaks.
1028 R. N. & H. C.—MRS. L. G. PRIDEAUX, Lindfield, Haywards Heath.
H. C.—1024, 1025. C.—1023, 1026.

Class 442.—*Yokohama Hens or Pullets.* [8 entries.]

- 1031 I. (30s. & R. N. for Champion¹), & 1035 R. N. & H. C.—MRS. L. G. PRIDEAUX, Lindfield, Haywards Heath.
1032 II. (20s.)—L. SCOTT MILLER, Greenoak Hill, Broomhouse, near Glasgow.
1030 III. (10s.)—ROBERT L. MOND, Combe Bank, near Sevenoaks.
H. C.—1033, 1036. C.—1034, 1037.

Class 443.—*Cocks or Cockerels, any other distinct variety except Bantams.*

[10 entries.]

- 1043 I. (30s.)—JOHN SMITH, Keythorpe Hall, Leicester. (Black Spanish.)
1045 II. (20s.)—S. W. THOMAS, Glasfryn, Forest Fach, Swansea. (Crève Cœur.)
1038 III. (10s.)—J. H. BAKER & SONS, The Forge, Barnstaple. (Malay.)
1040 R. N. & H. C.—MRS. CHRISTINE COLBECK, Boyle Hall, Wakefield. (Russian Orloff.)
H. C.—1042. C.—1046.

Class 444.—*Hens or Pullets, any other distinct variety except Bantams.*

[13 entries.]

- 1056 I. (30s.) JOHN SMITH, Keythorpe Hall, Leicester. (Black Spanish.)
1057 II. (20s.)—MASTER E. H. R. BEDFORD, The Rectory, West Hallam, Derby. (White Silkie.)
1058 III. (10s.)—S. W. THOMAS, Glasfryn, Forest Fach, Swansea. (Crève Cœur.)
1059 R. N. & H. C.—HARRY TURTON, Needfield, West Hallam, Derby. (Hamborough.)
H. C.—1048. C.—1053.

Class 445.—*Aylesbury Drakes or Ducks, bred prior to 1915.*

[8 entries.]

- 1061 I. (30s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
1060 II. (20s.)—JAMES HUNTLY & SON, Hired Poultry Farm, Coldstream, Berwickshire.
1055 III. (10s.)—THE REV. J. HEWETSON, Beoley Vicarage, Rowsley, Derbyshire.
1062 R. N. & H. C.—HENRY BICKFORD, Standeford, Four Ashea, Wolverhampton.
H. C.—1063. C.—1067.

Class 446.—*Aylesbury Drakes or Ducks, bred in 1915.* [2 entries.]

- 1049 I. (30s.)—JAMES HUNTLY & SON, Hired Poultry Farm, Coldstream, Berwickshire.
1070 II. (20s.)—MRS. B. WILLIS, Kithane Poultry Farm, Dunblane, N.B.

Class 447.—*Rouen Drakes or Ducks, bred prior to 1915.* [6 entries.]

- 1072 I. (30s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
1074 II. (20s.)—JAMES HUNTLY & SON, Hired Poultry Farm, Coldstream, Berwickshire.
1071 III. (10s.)—RALPH ALTY, Bucksaw Hall, Euxton, Chorley, Lancs.
1073 R. N. & H. C.—WILLIAM BYGOTT, Wing, Oakham, Rutland.
H. C.—1075, 1076.

Class 448.—*Rouen Drakes or Ducks, bred in 1915.* [2 entries.]

- 1078 I. (30s.)—FREDERICK W. MYHILL, The Red House, Hethel, Norwich.
1077 II. (20s.)—RALPH ALTY, Bucksaw Hall, Euxton, Chorley, Lancs.

Class 449.—*Indian Runner Drakes or Ducks, bred prior to 1915.*

[11 entries.]

- 1068 I. (30s. & Champion²)—MISS E. G. ALLIN, Woodston, Loddiswell, South Devon.
1067 II. (20s. & R. N. for Champion²)—LADY HARLECH, Brogyntyn, Oswestry.
1085 III. (10s.)—WILLIAM G. KINGWELL, Dartmoor Poultry Farm, South Brent, Devon.
1082 R. N. & H. C.—B. BUTLAND, Colebrook Poultry Farm, Plympton, South Devon.
H. C.—1079, 1081, 1084.

¹ Silver Medal given by the Yokohama Club for the best Yokohama.
² Special Prize of 10s. given by the Indian Runner Duck Club for the best Drake or Duck in Class 449.

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- Class 450.**—*Indian Runner Drakes or Ducks, bred in 1915.* [6 entries.]
 1095 I. (30s.) & Champion.¹—W. G. KINGWELL, Dartmoor Poultry Farm, South Brent.
 1090 II. (20s.) & R. N. for Champion.¹—MISS E. G. ALLIN, Woolston, Loddiswell.
 1093 III. (10s.)—LADY HARLECH, Brogyntyn, Oswestry.
 1091 R. N. & H. C.—MR. AND MRS. ERIK F. HURT, South Darley, Matlock.
 H. C.—1092, 1094.
- Class 451.**—*Buff Orpington Drakes or Ducks, bred prior to 1915.* [2 entries.]
 1096 I. (30s.) & Champion.²—JAMES HUNTLY & SON, Hirsel Poultry Farm, Coldstream.
 1097 II. (20s.)—WILLIAM G. KINGWELL, Dartmoor Poultry Farm, South Brent.
- Class 452.**—*Buff Orpington Drakes or Ducks, bred in 1915.* [3 entries.]
 1098 I. (30s.) & R. N. for Champion.³—TOM H. FURNESS, Carlton House, Chestonfield.
 1099 II. (20s.)—JAMES HUNTLY & SON, Hirsel Poultry Farm, Coldstream, Berwickshire.
 1100 III. (10s.)—WILLIAM G. KINGWELL, Dartmoor Poultry Farm, South Brent.
- Class 453.**—*Emden Ganders.* [3 entries.]
 1102 I. (30s.)—ALFRED BIRCH, Edge Farm, Sefton, via Seaforth, Liverpool.
 1101 II. (20s.)—ABBOT BROTHERS, East of England Poultry Farm, Thuxton, Norfolk.
 1103 III. (10s.)—LADY HARLECH, Brogyntyn, Oswestry.
- Class 454.**—*Emden Geese.* [2 entries.]
 1104 I. (30s.)—ABBOT BROTHERS, East of England Poultry Farm, Thuxton, Norfolk.
 1105 II. (20s.)—ALFRED BIRCH, Edge Farm, Sefton, via Seaforth, Liverpool.
- Class 455.**—*Toulouse Ganders.* [3 entries.]
 1107 I. (30s.)—BARNES BROTHERS, Lancashire Poultry Farm, Wiltshire, Blackburn.
 1108 II. (20s.)—WILLIAM BYGOTT, Wing, Cakham.
 1106 III. (10s.)—ABBOT BROTHERS, East of England Poultry Farm, Thuxton, Norfolk.
- Class 456.**—*Toulouse Geese.* [5 entries.]
 1111 I. (30s.) & 1113 II. (20s.)—BARNES BROTHERS, Wiltshire, Blackburn.
 1110 III. (10s.)—ABBOT BROTHERS, East of England Poultry Farm, Thuxton, Norfolk.
 1109 R. N. & H. C.—THOMAS ABBOT, Wymondham, Norfolk.
 H. C.—1112.
- Class 457.**—*White Turkey Cocks or Cockerels.* [6 entries.]
 1117 I. (30s.)—LADY HARLECH, Brogyntyn, Oswestry.
 1116 II. (20s.)—LADY EDWARD SOMERSET, Hambrook House, Charlton Kings, Glos.
- Class 458.**—*White Turkey Hens or Pullets.* [3 entries.]
 1122 I. (30s.)—FRANK MAY, Houndswood, Radlett, Herts.
- Class 459.**—*Turkey Cocks, any other variety.* [7 entries.]
 1126 I. (30s.)—WILLIAM JOHNSON, Rushbury, Church Stretton, Salop.
 1128 II. (20s.)—MURRAY LINDNER, Ham Court Poultry Farm, Charlton Kings, Cheltenham.
 1124 III. (10s.)—ABBOT BROTHERS, East of England Poultry Farm, Thuxton, Norfolk.
 1129 R. N. & H. C.—THOMAS ABBOT, Wymondham, Norfolk.
 H. C.—1123, 1127.
- Class 460.**—*Turkey Hens, any other variety.* [4 entries.]
 1131 I. (30s.)—ABBOT BROTHERS, East of England Poultry Farm, Thuxton, Norfolk.
 1132 II. (20s.)—WILLIAM JOHNSON, Rushbury, Church Stretton, Salop.
 1130 III. (10s.)—THOMAS ABBOT, Wymondham, Norfolk.
 1133 R. N. & H. C.—EDWARD KENDRICK, Weeford House, Lichfield.
- Class 461.**—*Sabright Bantam Cocks or Cockerels.* [4 entries.]
 1137 I. (30s.)—J. C. PRESTON, Bay House, Eilat, Lancaster.
 1134 II. (20s.)—MISS BETTY BENNETT, East Hill, Westbury-on-Trym, Bristol.
 1135 III. (10s.)—F. GEARY, Brooklyn, Warfield, Bracknell, Berks.
 1136 H. N. & H. C.—R. FLETCHER HEARNSHAW, Fox Hill, Burton Joyce, Nottingham.
- Class 462.**—*Sabright Bantam Hens or Pullets.* [8 entries.]
 1144 I. (30s.)—J. C. PRESTON, Bay House, Eilat, Lancaster.
 1142 II. (20s.)—W. & J. H. HEYS, Stone Croft, Leffwich Green, Northwich.
 1140 III. (10s.)—F. GEARY, Brooklyn, Warfield, Bracknell, Berks.
 1139 R. N. & H. C.—MISS BETTY BENNETT, East Hill, Westbury-on-Trym, Bristol.
 H. C.—1143. C.—1141.

¹ Special Prize of 10s. given by the Indian Runner Duck Club for the best Drake or Duck in Class 450.

² Special Prize of 10s. given by the Buff Orpington Duck Club for the best Buff Orpington Drake or Duck.

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- Class 463.**—*Wyandotte Bantam Cocks or Cockerels.* [10 entries.]
 1148 I. (30s.)—W. & J. H. HEYS, Stone Croft, Leftwich Green, Northwich.
 1154 II. (20s.) & 1152 E. N. & H. C.—RAWSON & CURZON, Fritchley, Ambergate, Derbyshire.
 1153 III. (10s.)—JOHN STONEY, 60 Victoria Road, Keighley.
 H. C.—1149, 1155. C.—1147.
- Class 464.**—*Wyandotte Bantam Hens or Pullets.* [8 entries.]
 1163 I. (30s.) & 1156 III. (10s.)—J. F. ENTWISLE, The Firs, Calder Grove, Wakefield.
 1162 II. (20s.)—RAWSON & CURZON, Fritchley, Ambergate, Derbyshire.
 1150 E. N. & H. C.—E. J. KENDALL, Halse Road, Brackley.
 H. C.—1160. C.—1161.
- Class 465.**—*Scotch Grey Bantam Cocks or Cockerels.* [10 entries.]
 1168 I. (30s.) & 1173 III. (10s.)—JAMES MCCRAE, 13 Thomson Street, Kilmarnock.
 1186 II. (20s.)—JOHN D. JOHNSTON, Norwood, Albert Avenue, Sedgley Park, Manchester.
 1167 E. N. & H. C.—J. E. KERR, Harviestoun Castle, Dollar.
 H. C.—1172. C.—1169.
- Class 466.**—*Scotch Grey Bantam Hens or Pullets.* [13 entries.]
 1178 I. (30s.) & 1183 III. (10s.)—JAMES MCCRAE, 13 Thomson Street, Kilmarnock.
 1176 II. (20s.)—JOHN D. JOHNSTON, Norwood, Albert Avenue, Sedgley Park, Manchester.
 1186 E. N. & H. C.—R. FLETCHER HEARNshaw, Fox Hill, Burton Joyce, Nottingham.
 H. C.—1174. C.—1181.
- Class 467.**—*Old English Game Bantam Cocks or Cockerels.* [9 entries.]
 1193 I. (30s.)—R. S. MARSDEN, Pendle Hotel, Chatburn, Clitheroe.
 1192 II. (20s.)—W. & J. H. HEYS, Stone Croft, Leftwich Green, Northwich.
 1189 III. (10s.)—J. F. ENTWISLE, The Firs, Calder Grove, Wakefield.
 1191 E. N. & H. C.—A. HENSHAW, Rose Cottage, Norman Road, Ripley, Derby.
 H. C.—1188, 1190, 1194, 1195.
- Class 468.**—*Old English Game Bantam Hens or Pullets.* [10 entries.]
 1201 I. (30s.)—R. S. MARSDEN, Pendle Hotel, Chatburn, Clitheroe.
 1196 II. (20s.)—J. F. ENTWISLE, The Firs, Calder Grove, Wakefield.
 1198 III. (10s.)—W. & J. H. HEYS, Stone Croft, Leftwich Green, Northwich.
 1197 E. N. & H. C.—ARTHUR HENSHAW, Rose Cottage, Norman Road, Ripley, Derby.
 H. C.—1200, 1202, 1204. C.—1203.
- Class 469.**—*Modern Game Bantam Cocks or Cockerels, any colour.* [8 entries.]
 1207 I. (30s.)—WALTER FIRTH, Read, Blackburn.
 1211 II. (20s.)—DAVID WISHART, The Ferry, Chatteris, Cambs.
 1208 III. (10s.)—J. H. HARTLEY, Holly Bank, Hipperholme, Yorks.
 1215 E. N. & H. C.—H. V. MACHIN, Gateford Hill, Workson.
 H. C.—1210, 1212. C.—1206.
- Class 470.**—*Modern Game Bantam Hens or Pullets, any colour.* [9 entries.]
 1218 I. (30s.)—J. HARTLEY, Holly Bank, Hipperholme, Yorks.
 1216 II. (20s.)—J. F. ENTWISLE, The Firs, Calder Grove, Wakefield.
 1214 III. (10s.)—O. CHALLONER, Sheffield Lane Top, Sheffield.
 1217 E. N. & H. C.—WALTER FIRTH, Read, Blackburn.
 H. C.—1219, 1220, 1221.
- Class 471.**—*Yokohama Bantam Cocks or Cockerels.* [4 entries.]
 1224 I. (30s.) & Champion¹ & 1226 III. (10s.)—F. J. S. CHATTERTON, 34 Elm Park Road, Finchley, N.
 1223 II. (20s.) & 1225 E. N. & H. C.—ERNEST BROWN, Langborough, Wokingham, Berks.
- Class 472.**—*Yokohama Bantam Hens or Pullets.* [6 entries.]
 1228 I. (30s.) & E. N. for Champion¹ & 1231 II. (20s.)—F. J. S. CHATTERTON, 34 Elm Park Road, Finchley, N.
 1227 III. (10s.)—ERNEST BROWN, Langborough, Wokingham, Berks.
 1232 E. N. & H. C.—R. SCOTT MILLER, Greenoak Hill, Broomhouse, near Glasgow.
 H. C.—1229. C.—1230.
- Class 473.**—*Japanese Bantam Cocks or Cockerels.* [11 entries.]
 1243 I. (30s.) & Champion²—MRS. CHRISTINE COLBECK, Boyle Hall, Wakefield.
 1234 II. (20s.)—J. F. ENTWISLE, The Firs, Calder Grove, Wakefield.
 1241 III. (10s.)—R. FLETCHER HEARNshaw, Fox Hill, Burton Joyce, Nottingham.
 1239 E. N. & H. C.—F. & O. ROBINSON, 3 Hardings Road, Keighley.
 H. C.—1233. C.—1236.

¹ Silver Medal given by the Yokohama Club for the best Yokohama Bantam.

² Special Prize given by the Japanese Bantam Club for the best Japanese Bantam.

Award of Prizes at Nottingham, 1915. cxxi

Class 474.—*Japanese Bantam Hens or Pullets.* [9 entries.]

- 1252 I. (30s.)—**R. N. for Champion.**—**MRS. CHRISTINE COLBERCK**, Boyle Hall, Wakefield.
 1244 II. (20s.)—**ALFRED E. W. DARBY**, Adcote, Shrewsbury.
 1250 III. (10s.)—**R. FLETCHER HEARNshaw**, Fox Hill, Burton Joyce, Nottingham.
 1248 **R. N. & H. C.**—**F. & O. ROBINSON**, 3 Hardings Road, Keighley.
H. C.—1246. **G.**—1249.

Class 475.—*Bantam Cocks or Cockerels, any other variety.* [15 entries.]

- 1261 I. (30s.)—**ARTHUR HENSHAW**, Rose Cottage, Norman Road, Ripley, Derby. (Cochin.)
 1254 II. (20s.)—**W. R. BEES**, Pill Farm, Barnstaple. (Indian Game.)
 1267 III. (10s.)—**ROBERT S. WILLIAMSON**, The Grange, Hednesford. (Cochin.)
 1256 **R. N. & H. C.**—**CATER & BOOTH**, Seabrooks, Alfreton, Derbyshire. (Rosecomb.)
H. C.—1253, 1259. **G.**—1257, 1264.

Class 476.—*Bantam Hens or Pullets, any other variety.* [19 entries.]

- 1270 I. (30s.)—**J. F. ENTWISLE**, The Firs, Calder Grove, Wakefield. (White Cochins.)
 1286 II. (20s.) & 1274 III. (10s.)—**R. FLETCHER HEARNshaw**, Fox Hill, Burton Joyce, Nottingham. (Black Barbu d'Anvers and Indian Game.)
 1275 **R. N. & H. C.**—**ARTHUR HENSHAW**, Rose Cottage, Norman Road, Ripley, Derby. (Cochin.)
H. C.—1276, 1282, 1284. **G.**—1268, 1283.

FARM AND DAIRY PRODUCE OF THE UNITED KINGDOM.

Butter.

Class 477.—*Two Pounds of Fresh Butter, without any salt, made up in plain pounds, from the milk of Channel Island, Devon, or South Devon Cattle and their crosses.* [16 entries.]

- 15 I. (£4.)—**MRS. JOHN WAY**, West Bridge, Bishopsmyton, South Molton, Devon.
 7 II. (£2.)—**MRS. H. E. JEROME**, Bilton Hall, York.
 1 III. (£1.)—**MRS. A. A. BERE**, Stoodleigh Barton, near Tiverton, Devon.
 14 **R. N. & H. C.**—**MRS. UNDERWOOD**, The Combe, Little Gaddesden, Berkhamsted.
H. C.—9, 16. **G.**—2, 11.

Class 478.—*Two Pounds of Fresh Butter, without any salt, made up in plain pounds, from the milk of Cattle of any breed or cross other than those mentioned in Class 477.* [12 entries.]

- 22 I. (£4.)—**JOHN R. T. KINGWELL**, Great Aish, South Brent, South Devon.
 19 II. (£2.)—**THE EARL OF DARTMOUTH**, Patsull House, Wolverhampton.
 20 III. (£1.)—**MISS HALL**, Low Farm, Redcar, Yorks.
 24 **R. N. & H. C.**—**MISS RENNIE**, Park Head, Slamannan, Stirlingshire.
H. C.—21, 23. **G.**—26, 28.

Class 479.—*Two Pounds of Fresh Butter, slightly salted, made up in plain pounds, from the milk of Channel Island, Devon, or South Devon Cattle and their crosses.* [17 entries.]

- 44 I. (£4.)—**MRS. JOHN WAY**, West Bridge, Bishopsmyton, South Molton, Devon.
 37 II. (£2.)—**MRS. L. R. MILDON**, Mead Down, Rackenford, North Devon.
 43 III. (£1.)—**MRS. UNDERWOOD**, The Combe, Little Gaddesden, Berkhamsted.
 42 **R. N. & H. C.**—**GEORGE MURRAY SMITH**, Gumley Hall, Market Harborough.
H. C.—30, 34. **G.**—32, 38, 40.

Class 480.—*Two Pounds of Fresh Butter, slightly salted, made up in plain pounds, from the milk of Cattle of any breed or cross other than those mentioned in Class 479.* [13 entries.]

- 51 I. (£4.)—**JOHN R. T. KINGWELL**, Great Aish, South Brent, South Devon.
 47 II. (£2.)—**THE EARL OF DARTMOUTH**, Patsull House, Wolverhampton.
 53 III. (£1.)—**MISS RENNIE**, Parkhead, Slamannan, Stirlingshire.
 50 **R. N. & H. C.**—**MRS. F. S. KING**, High Barn House, Riseley, Beds.
H. C.—46. **G.**—55.

¹ Special Prize given by the Japanese Bantam Club for the best Japanese Bantam.

Class 481.—*Three Pounds of Fresh Butter, slightly salted, made up in pounds in the most attractive marketable designs.* [5 entries.]

- 61 I. (£4.)—MRS. L. R. MILDON, Mead Down, Rackenford, North Devon.
62 II. (£2.)—MRS. JOHN WAY, West Bridge, Bishopsmypton, South Molton, Devon.
63 III. (£1.)—MRS. A. A. BARE, Stockleigh Barton, near Tiverton, Devon.
64 B. N. & H. C.—THE BART. OF DARTMOUTH, Patshull House, Wolverhampton.

Class 482.—*Three Pounds of Fresh Butter, slightly salted, made up in pounds, and packed in non-returnable boxes for transmission by rail or parcel post.* [5 entries.]

- 67 I. (£4.)—MRS. JOHN WAY, West Bridge, Bishopsmypton, South Molton, Devon.
68 II. (£2.)—MRS. L. R. MILDON, Mead Down, Rackenford, North Devon.
69 III. (£1.)—MRS. HUBERT HUTT, Wheatfield, near Tetworth, Oxon.

Cheese.

Made in 1915.

Class 483.—*Three Cheddar Cheeses, of not less than 50 lb. each.* [9 entries.]

- 73 I. (£5.)—ALEX. CROSS, Knockdon, Maybole, Ayrshire.
74 II. (£3.)—ALEX. WILLIE, Moss-gel, Mauchline, Ayrshire.
75 III. (£2.)—ROBERT STEVENSON, Boghead, Galston, Ayrshire.
76 B. N. & H. C.—WILLIAM BARRON, Caigton Dairy, Castle Douglas, C.—71.

Class 484.—*Three Cheddar Truckles.* [7 entries.]

- 81 I. (£4.)—ALEX. CROSS, Knockdon, Maybole, Ayrshire.
82 II. (£2.)—ALEX. WILLIE, Moss-gel, Mauchline, Ayrshire.
83 III. (£1.)—P. H. CLARKE, West Barn Farm, Witham Friary, Bath.
84 B. N. & H. C.—ROBERT STEVENSON, Boghead, Galston, Ayrshire, C.—82.

Class 485.—*Three Coloured Cheshire Cheeses, of not less than 40 lb. each.* [12 entries.]

- 86 I. (£5.)—EDWIN COOKSON, Poulton, Pufford, Chester.
87 II. (£3.)—ROBERT DAVIES, Round House, Edge, Malpas.
88 III. (£2.)—F. A. MOORE, The Grange, Checkley, Stoke-on-Trent.
89 B. N. & H. C.—SAMUEL DUTTON, Oak Farm, Houghton, Tarporley, C.—80.

Class 486.—*Three Uncoloured Cheshire Cheeses, of not less than 40 lb. each.* [6 entries.]

- 97 I. (£5.)—WILLIAM H. GITTINS, The Hall Farm, Rayton, Eleven-Towns, Salop.
101 II. (£3.)—ROBERT PARKER, Church Farm, Preston Gubbolds, near Shrewsbury.
102 III. (£2.)—CHARLES PRICE, On-ston, Ellesmere, Salop, C.—89.

Class 487.—*Three Leicestershire Cheeses.* [3 entries.]

- 103 I. (£4.)—FRANCIS W. TOMLINSON, The Home Farm, Ashby Parva, Lutterworth.
104 II. (£2.)—SWEEPSTON DAIRY COMPANY, Sweepston, Ashby-de-la-Zouch.
105 III. (£1.)—JOHN HARRISON, Pailton, near Rugby.

Class 488.—*Three Staffordshire or Derbyshire Cheeses.* [5 entries.]

- 110 I. (£4.)—MRS. C. A. GOODWIN, Carr House Farm, Aston, Stone.
112 II. (£2.)—CROXDEN DAIRY ASSOCIATION, Croxden, Rugeley, Stafford.
113 III. (£1.)—CHEDDAR VALLEY DAIRY CO., LTD., Rookbridge, near Axbridge.
107 B. N. & H. C.—BURTON AND DISTRICT FARMERS DAIRY CO., LTD., Dale Street, Burton-on-Trent, C.—106.

Class 489.—*Three Stilton Cheeses.* [13 entries.]

- 115 I. (£4.)—J. HALL, Starham, Melton Mowbray.
117 II. (£2.)—COLIN & CO., LTD., Burton Street, Melton Mowbray.
119 III. (£1.)—A. P. OLIVER, Morefield, Tilton-on-the-Hill, Leicester.
116 B. N. & H. C.—WILLIAM JACKSON, Frisby House, Billesdon, Leicester, C.—113.

Class 490.—*Three Wensleydale Cheeses, Stilton Shape.* [5 entries.]

- 126 I. (£4.)—ALFRED ROWNTREE, Coverham, Middleham, Yorks.
125 II. (£2.)—MISS BETSY J. MUDD, Aldborough Dairy, Boroughbridge.
128 III. (£1.)—MRS. D. C. WILLIS, Manor House, Carperby, Yorks.

Class 491.—*Three Caerphilly Cheeses.* [4 entries.]

- 129 I. (24.)—MISS NANNY DAVIES, Tynycoed, Nantgaredig, Carmarthenshire.
132 II. (22.)—WILTS. UNITED DAIRIES, LTD., Wells, Somerset.

Bacon and Hams.

Class 492.—*Two Sides of Bacon, pale dried, Wiltshire shape, with Ham attached.* [4 entries.]

- 134 I. (23.)—J. H. ISMAY, Iwerne Minster, Blandford.
135 II. (22.)—T. MARSHALL & SON, Dore, Sheffield.

Class 493.—*Two Sides of Bacon, smoke-dried, Wiltshire shape, with Ham attached.* [3 entries.]

- 138 I. (23.)—J. H. ISMAY, Iwerne Minster, Blandford.

Class 494.—*Two Sides of Bacon, pale dried, Wiltshire shape, Hamless.*
[6 entries.]

- 143 I. (23.)—J. H. ISMAY, Iwerne Minster, Blandford.
144 II. (22.)—T. MARSHALL & SON, Dore, Sheffield.

Class 495.—*Two Sides of Bacon, smoke dried, Wiltshire shape, Hamless.*
[3 entries.]

- 147 II. (22.)—JAMES H. ISMAY, Iwerne Minster, Blandford.

Class 496.—*Two Sides of Bacon, cured in the Cumberland style, Hamless.*
[1 entry.]

- 149 III. (21.)—JOHN JOHNSON, Fern Leigh, Brickkiln Lane, Banks, near Southport.

Class 497.—*Two Hams, pale dried, not exceeding 11 lb. weight.* [6 entries.]

- 155 I. (23.)—T. MARSHALL & SON, Dore, Sheffield.
154 II. (22.)—JOHN JOHNSON, Fern Leigh, Brickkiln Lane, Banks, near Southport.
153 III. (21.)—J. H. ISMAY, Iwerne Minster, Blandford.

Class 498.—*Two Hams, smoke dried, not exceeding 14 lb. weight.* [3 entries.]

- 158 I. (23.)—LORAM BROS., Rosamondford, Aylesbeare, near Exeter.
157 II. (22.)—J. H. ISMAY, Iwerne Minster, Blandford.

Class 499.—*Two Hams, pale dried, exceeding 11 lb. weight.* [5 entries.]

- 162 I. (23.)—JOHN JOHNSON, Fern Leigh, Brickkiln Lane, Banks, near Southport.
163 II. (22.)—T. MARSHALL & SON, Dore, Sheffield.
161 III. (21.)—J. H. ISMAY, Iwerne Minster, Blandford.

Class 500.—*Two Hams, smoke dried, exceeding 14 lb. weight.* [1 entry.]

- 164 I. (23.)—J. H. ISMAY, Iwerne Minster, Blandford.

Cider and Perry.

N.B.—The names of the Fruits from which the Cider or Perry is stated by the Exhibitor to have been made are added after the address of the Exhibitor. In Classes 503, 506, 507, and 508 the date of making is also given.

Class 501.—*Casks of Dry Cider, of not less than 9, and not more than 18 gallons, made in 1914.* [10 entries.]

- 167 I. (23.)—HERBERT J. DAVIS, Goldsborough House, Sutton Montis, Sparkford, Somerset. (Yarlington Mill, White and Chisel Jerseys, Kingston Black.)
175 II. (22.)—TILLEY BROS., Shepton Mallet, Somerset. (Red and Chisel Jerseys, Kingston Black.)
170 III. (21.)—PULLIN BROS., Compton Greenfield, near Bristol. (Mixed Fruit.)
171 R. N. & H. C.—QUANTOCK VALE CIDER CO. LTD., North Petherton, Bridgwater. (Mixed Fruit.)

Class 502.—*Casks of Sweet Cider, of not less than 9, and not more than 18 gallons, made in 1914.* [14 entries.]

- 187 I. (23.)—TILLEY BROS., Shepton Mallet, Somerset. (Red Jersey, Chisel Jersey, Horners Doves.)
178 II. (22.)—HERBERT J. DAVIS, Goldsborough House, Sutton Montis, Sparkford, Somerset. (Royal and White Jersey, Harry Masters, Cap of Liberty.)
183 III. (21.)—WILLIAM D. LANE, White House, Llanvethern, near Abergavenny. (Mixed Fruit.)
186 R. N. & H. C.—HERBERT J. DAVIS. (White Close Pippin, Dove, Royal Jersey, Kingston Black.)
R. C.—185.

Class 503.—*Casks of Cider, of not less than 9, and not more than 18 gallons, made previous to 1914. [5 entries.]*

- 193 I. (£3.)—PHILIP WILLCOX, Nupdown, Thornbury, Glos. (Kingston Black, 1913.)
 192 II. (£2.)—TILLEY BROS., Shepton Mallet, Somerset. (Kingston Black, White Jersey, Horners, 1913.)
 190 III. (£1.)—QUANTOCK VALE CIDER CO., LTD., North Petherton, Bridgwater. (Mixed Fruit, 1913.)

Class 504.—*One Dozen Bottles of Dry Cider, made in 1914. [14 entries.]*

- 199 I. (£3.)—HERBERT J. HELPS, Bridge Farm, West Lydford, Taunton. (Mixed Fruit.)
 201 II. (£2.)—PULLIN BROS., Compton Greenfield, near Bristol. (Mixed Fruit.)
 202 III. (£1.)—QUANTOCK VALE CIDER CO., LTD., North Petherton, Bridgwater. (Mixed Fruit.)
 196 R. N. & H. C.—SIR IAN HEATHCOTE AMORY, BT., Knightshayes Court, Tiverton, Devon. (Mixed Fruit.)
 H. C. 203.

Class 505.—*One Dozen Bottles of Sweet Cider, made in 1914. [22 entries.]*

- 226 I. (£3. & R. N. for Champion.)—HENRY ROBBINS & SON, Ebley, Stroud, Glos. (Mixed Fruit.)
 208 II. (£2.)—SIR IAN HEATHCOTE AMORY, BT., Knightshayes Court, Tiverton, Devon. (Mixed Fruit.)
 218 III. (£1.) R. JOHNSON, Llanddewi Court, Abergavenny. (Cherry Norman, Fredrick.)
 228 R. N. & H. C.—TILLEY BROS., Shepton Mallet, Somerset. (Royal and Red Jersey, Horners.)
 H. C.—221. C.—220.

Class 506.—*One Dozen Bottles of Cider, made previous to 1914. [11 entries.]*

- 237 I. (£3. & Champion.)—RIDLER & SON, Clebonger Manor, Hereford. (Mixed Fruit, 1913.)
 234 II. (£2.)—HERBERT J. DAVIS, Goldborough House, Sutton Mootis, Sparkford, Somerset. (Yarlington Mill, White and Chisel Jersey, Cap of Liberty, Kingston Black, 1913.)
 232 III. (£1.)—CAPT. F. W. CRAWSHAY, Hempnall Cider Factory, Norwich. (Kingston Black, Bitter Sweet, Dabinett Jersey, Norton Bitter, Cap of Liberty, 1913.)
 231 R. N. & H. C.—CAPT. F. W. CRAWSHAY. (Mostly Kingston Black, 1913.)
 H. C.—230. C.—230.

Class 507.—*One Dozen Bottles of Dry Perry. [2 entries.]*

- 241 I. (£3.)—TILLEY BROS., Shepton Mallet, Somerset. (Butt and Oldfield, 1914.)
 242 II. (£2.)—TILLEY BROS. (Butt, 1914.)

Class 508.—*One Dozen Bottles of Sweet Perry. [7 entries.]*

- 245 I. (£3.)—HENRY MASON, Withington, near Hereford. (Mixed Fruit, 1914.)
 243 II. (£2.)—HENRY MASON. (Taynton Squash and Barland, 1911.)
 244 III. (£1.)—HENRY MASON. (Taynton Squash, 1911.)
 246 R. N. & H. C.—TILLEY BROS., Shepton Mallet, Somerset. (Oldfield, 1914.)

Bottled Fruit.**Class 509.**—*Three Varieties of Fruit bottled in syrup, selected from Red or Yellow Plums, Greengages, Pears, Cherries and Raspberries. [5 entries.]*

- 254 I. (30s.)—MRS. M. E. PARLOUR, Croft, Darlington.
 250 II. (20s.)—MRS. V. BANKS, 102 Park Street, Grosvenor Square, London, W.
 252 III. (10s.)—R. FLETCHER HEARNshaw, Fox Hill, Burton Joyce, Nottingham.
 251 R. N. & H. C.—MISS ELSIE G. COOK, Ashford Farm, Ashford, Middlesex.

Class 510.—*Six Varieties of Fruit bottled in water, selected from Red Plums, Yellow Plums, Victoria Plums, Greengages, Pears, Apricots, Damsons and Cherries. [2 entries.]*

- 255 I. (£3.)—MRS. V. BANKS, 102 Park Street, Grosvenor Square, London, W.

Class 511.—*Six Varieties of Soft Fruit, bottled in water, selected from Gooseberries, Raspberries, Loganberries, Blackberries, Black Currants, Red Currants, Raspberries and Red Currants Mixed. [3 entries.]*

- 257 I. (£3.)—MRS. V. BANKS, 102 Park Street, Grosvenor Square, London, W.
 256 II. (£2.)—MISS MARY PARLOUR, Croft, Darlington.

¹ Challenge Cup given by the Cider Growers of the West of England for the best exhibit of Cider in Classes 501-506.

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Class 512.—*Three Varieties of Fruit, bottled in water, selected from Red or Victoria Plums, Yellow Plums, Pears, Greengages, Damsons, and Cherries.* [3 entries.]

262 I. (30s.)—GEORGE W. WEATHERILL, Belmont, Stokesley, Yorks.

260 II. (20s.)—MISS ELSIE G. COOK, Ashford Farm, Ashford, Middlesex.

261 III. (10s.)—MRS. M. E. PARLOUR, Croft, Darlington.

Class 513.—*Three Varieties of Soft Fruit, bottled in water, selected from gooseberries, Raspberries, Black Currants, Loganberries, Blackberries, Raspberries and Red Currants mixed.* [4 entries.]

264 I. (30s.)—LORAM BROTHERS, Rossmundford, Aylesbeare, near Exeter.

266 II. (20s.)—GEORGE W. WEATHERILL, Belmont, Stokesley, Yorks.

265 III. (10s.)—MRS. M. E. PARLOUR, Croft, Darlington.

263 E. N. & H. C. —MISS ELSIE G. COOK, Ashford Farm, Ashford, Middlesex.

Wool.¹

Of 1915 Clip.

Class 514.—*Three Fleeces of Oxford Down Wool.* [3 entries.]

269 I. (£3.)—HUGH W. STILGOE, The Grounds, Adderbury, near Banbury.

267 II. (£2), & 268 III. (£1.)—ROBERT W. HOBBS & SONS, Kilmacott, Lechlade.

Class 515.—*Three Fleeces of Shropshire Wool.* [4 entries.]

273 I. (£3.)—K. W. MILNES, Stanway Manor, Church Stretton.

272 II. (£2.)—EDWARD KENDRICK, Wheaton Aston, Stafford.

271 III. (£1.)—MRS. W. F. INGE, Thorpe Hall, Tamworth, Staffs.

Class 516.—*Three Fleeces of Southdown Wool.* [5 entries.]

276 I. (£3.)—C. H. LLOYD-EDWARDS, Nanhoron, Pwllheli.

278 II. (£2), & 277 III. (£1.)—LADY WERNHER, Luton Hoe, Luton.

Class 517.—*Three Fleeces of Hampshire Down Wool.*

[No entry.]

Class 518.—*Three Fleeces of Dorset Horn Wool.* [6 entries.]

284 I. (£3, & Champion²), 283 II. (£2), & 282 III. (£1.)—R. H. PALMER, The West Stafford Flock, Dorchester.

Class 519.—*Three Fleeces of Ryeland Wool.* [7 entries.]

291 I. (£3), & 290 II. (£2),—DAVID J. THOMAS, Talachddu, Brecon.

285 III. (£1.)—HUGH A. CHRISTY, Llangoed Castle, Llyswen, Breconshire.

Class 520.—*Three Fleeces of Lincoln Long Wool.* [5 entries.]

295 I. (£3.)—THOMAS SPINK, Hunmanby, Yorks.

293 II. (£2.)—ANCELL B. ROLT, Home Farm, Sturton, Brigg, Lines.

Class 521.—*Three Fleeces of Leicester Wool.* [3 entries.]

299 I. (£3.)—JOHN W. HARRISON, Underpark, Leatholm, Gosnport, Yorks.

297 II. (£2), & 298 III. (£1.)—GEORGE HARRISON, Gaimford Hall, Darlington.

Class 522.—*Three Fleeces of Border Leicester Wool.*

[No entry.]

Class 523.—*Three Fleeces of Wensleydale Blue-Faced Wool.* [3 entries.]

302 I. (£3.)—JOHN A. WILLIS, Manor House, Oatperby, Yorks.

300 II. (£2), & 301 III. (£1.)—LORD HENRY BENTING, M.P., Underley Hall, Kirkby Lonsdale.

Class 524.—*Three Fleeces of Kent or Romney Marsh Wool, from Rams of any age.* [4 entries.]

305 I. (£3), & 306 II. (£2.)—J. EGERTON QUESTED, The Firs, Cheriton, Kent.

304 III. (£1.)—JAMES R. BETTS, Greenhill Farm, Otham, Maidstone.

525.—*Three Fleeces of Kent or Romney Marsh Wool, excluding rams.*

[13 entries.]

311 I. (£3), & 312 III. (£1.)—L. H. & G. W. FINN, Westwood Court, Faversham, Kent.

319 II. (£2.)—R. STANLEY TROUTS, Singleton Manor, Great Chart, Kent.

¹ The Second and Third Prizes in Classes 514-529 were given by the respective Flock Book Societies.

² Special Prize of £3 given by the Dorset Horn Sheep Breeders' Association for the best exhibit of Dorset Horn Wool in Class 518.

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- Class 526.**—*Three Fleeces of Cotswold Wool.* [3 entries.]
 322 I. (£3.)—MURTON & LONG, Pudding Norton Hall, Fakenham, Norfolk.
 320 II. (£2.)—W. T. GARNE & SON, Aldsworth, Northleach, Glos.
 321 III. (£1.)—F. W. P. MATTHEWS, Fildes, Oxford.
- Class 527.**—*Three Fleeces of Dartmoor Wool.* [3 entries.]
 323 I. (£3.) & 324 II. (£2.)—JOHN H. GLOVER, Cornwood, South Devon.
 325 III. (£1.)—W. A. JOHNS & SONS, Cleave, Lifton, Devon.
- Class 528.**—*Three Fleeces of Exmoor Horn Wool.* [5 entries.]
 329 I. (£3.) & 330 III. (£1.)—PERCY SMYTH, Bedford, Dulverton Somerset.
 327 II. (£2.)—T. C. PEARSE, Leigh, Dulverton, Somerset.
- Class 529.**—*Three Fleeces of Welsh Mountain Wool.* [9 entries.]
 337 I. (£3.) & 336 III. (£1.)—WILLIAM G. ROBERTS, Dyserth Hall, Dyserth.
 331 II. (£2.)—H. O. ELLIS, Tynhendre, Bangor, N. Wales.
- Class 530.**—*Three Fleeces of First Cross between Two Distinct Breeds of Short Wool.* [4 entries.]
 343 I. (£3.)—WILLIAM G. ROBERTS, Dyserth Hall, Dyserth. Southdown Ram and Welsh Mountain Ewe.
 342 II. (£2.)—H. O. ELLIS, Tynhendre, Bangor, N. Wales. Southdown Ram and Welsh Mountain Ewe.
- Class 531.**—*Three Fleeces of First Cross between Two Distinct Breeds of Long Wool.* [2 entries.]
 344 I. (£3.) & 345 II. (£2.)—R. & J. PIERSON, Tanton Farm, Stokesley, Yorks. Lincoln Ram and Leicester Ewe.
- Class 532.**—*Three Fleeces of First Cross of any Long and Short Wool.* [4 entries.]
 348 I. (£3.)—R. & J. PIERSON, Tanton Farm, Stokesley, Yorks. Oxford Down Ram and Leicester Ewe.
 346 II. (£2.)—GEORGE HARRISON, Gainford Hall, Darlington. Leicester Ram and Oxford Ewe.
 340 III. (£1.)—PETER ROBERTSON, Tudhope, Jedburgh. Border Leicester Ram and Cheviot Ewe.
- Class 533.**—*Three Fleeces of First Cross of Pure-bred Sheep, of which one must be Mountain or Moorland.* [7 entries.]
 356 I. (£3.)—UNIVERSITY COLLEGE OF NORTH WALES, College Farm, Aber, Bangor. Southdown Ram and Welsh Mountain Ewe.
 352 II. (£2.)—C. H. LLOYD EDWARDS, Nanthorpe, Pwllheli. Southdown Ram and Welsh Mountain Ewe.
 354 III. (£1.)—WILLIAM G. ROBERTS, Dyserth Hall, Dyserth. Southdown Ram and Welsh Mountain Ewe.

HIVES, HONEY, AND BEE APPLIANCES.¹

- Class 538.**—*Observatory Hives, with not less than three Brood Combs, with Bees and Queen.* [2 entries.]
 369 I. (15s.)—J. T. WILLSON, York Villas, Shirebrook, Mansfield.
- Class 539.**—*Any appliances connected with Bee-keeping.* [1 entry.]
 [No Award.]
- Class 540.**—*Best and Most Attractive Displays of Honey of any year, approximating 56 lb., to include both comb and extracted honey in their various forms.²* [1 entry.]
 [No Award.]
- Class 541.**—*Comb Honey.* [9 entries.]
 460 I. (10s.)—G. MARSHALL, Norwell, Newark.
 467 II. (7s. 6d.)—H. MERRYWEATHER, The Gables, Southwell.
 463 III. (5s.)—R. B. HUTCHINSON, Bilsthorpe, Southwell.
 465 R. N. & H. C.—J. E. ALLSOPP, 87 Gertrude Road, West Bridgford, Notts.

¹ Owing to the exceptional circumstances caused by the war, the Exhibitors of previous years consented to exhibit in Classes 534-537 not for competition.

² Entries in Classes 540-545 could only be made by Members of the Nottinghamshire Beekeepers' Association.

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Class 542.—Light Extracted Honey. [10 entries.]

- 477 I. (10s.)—J. T. WILLSON, Shirebrook, Notts.
 478 II. (7s. 6d.)—JAMES NORTH, Sutton-in-Ashfield.
 479 III. (5s.)—WILLIAM LEE, Southwell.
 476 R. N. & H. C.—H. MERRYWEATHER, The Gables, Southwell.
 H. C.—476a.

Class 543.—Medium and Dark Extracted Honey. [10 entries.]

- 484 I. (10s.)—JAMES NORTH, Sutton-in-Ashfield.
 484B II. (7s. 6d.)—CHARLES F. SMITH, Sutton-in-Ashfield.
 485 III. (5s.)—J. T. WILLSON, Shirebrook, Notts.
 480 R. N. & H. C.—G. HOUGHTON, South Normanton, Alfreton.

Class 544.—Granulated Honey. [7 entries.]

- 491 I. (7s. 6d.)—JAMES NORTH, Sutton-in-Ashfield.
 491A II. (5s.)—CHARLES F. SMITH, Sutton-in-Ashfield.
 487 III. (2s. 6d.)—W. HOPKINSON, Wellow, Newark.
 491B R. N. & H. C.—
 H. C.—489.

Class 545.—Honeydew. [6 entries.]

- 497 I. (7s. 6d.)—J. T. WILLSON, Shirebrook, Notts.
 495 II. (5s.)—W. DARRINGTON, The Limes, Eastwood.
 494 III. (2s. 6d.)—G. MARSHALL, Norwell, Newark.
 496 R. N. & H. C.—JAMES NORTH, Sutton-in-Ashfield.

Class 546.—Comb Honey.¹ [6 entries.]

- 372 I. (15s.)—J. PEARMAN, Penny Long Lane, Derby.
 374 II. (10s.)—R. ROBSON, Cheviot Street, Wooler.
 375 III. (5s.)—STUDLEY HORTICULTURAL COLLEGE, Studley Castle, Warwick.
 373 R. N. & H. C.—J. ROBSON, Coatwalls, Rothbury, Northumberland.

Class 547.—Extracted Light-coloured Honey. [12 entries.]

- 378 I. (15s.)—T. A. DENNISON, The Laurels, Stockton, Rugby.
 387 II. (10s.)—STUDLEY HORTICULTURAL COLLEGE, Studley Castle, Warwick.
 377 III. (5s.)—J. BERRY, The Apary, Llantwit, N. Wales.
 388 R. N. & H. C.—J. T. WILLSON, York Villas, Shirebrook, Mansfield.
 H. C.—382, 383, 385.

Class 548.—Extracted Medium or Dark-coloured Honey. [8 entries.]

- 394 I. (15s.)—STUDLEY HORTICULTURAL COLLEGE, Studley Castle, Warwick.
 391 II. (10s.)—T. A. DENNISON, The Laurels, Stockton, Rugby.
 392 III. (5s.)—J. PEARMAN, Penny Long Lane, Derby.

Class 549.—Granulated Honey. [6 entries.]

- 402 I. (15s.)—J. T. WILLSON, York Villas, Shirebrook, Mansfield.
 400 II. (10s.)—STUDLEY HORTICULTURAL COLLEGE, Studley Castle, Warwick.
 398 III. (5s.)—J. PEARMAN, Penny Long Lane, Derby.

Class 550.—Comb Honey.² [6 entries.]

- 404 I. (15s.)—R. BROWN & SON, Flora Apiary, Somersham, Hunts.
 406 II. (10s.)—C. W. DYER, Compton Crossing, Newbury, Berks.

Class 551.—Extracted Light-coloured Honey. [3 entries.]

- 410 I. (15s.)—R. BROWN & SON, Flora Apiary, Somersham, Hunts.
 408 II. (10s.)—R. H. BAYNES, 51 Bridge Street, Cambridge.
 411 III. (5s.)—W. J. GOODRICH, 2 Oxford Street, Gloucester.

Class 552.—Extracted Medium or Dark-coloured Honey. [5 entries.]

- 412 I. (15s.)—C. E. BILLSON, Cranford, Kettering.
 413 II. (10s.)—R. BROWN & SON, Flora Apiary, Somersham, Hunts.
 414 III. (5s.)—G. BRYDEN, 46 Star Hill, Rochester.

Class 553.—Granulated Honey. [4 entries.]

- 417 I. (15s.)—R. H. BAYNES, 51 Bridge Street, Cambridge.

¹ Entries in Classes 546-549 can only be made by residents in Cheshire, Cumberland, Derbyshire, Durham, Herefordshire, Lancashire, Leicestershire, Lincolnshire, Monmouthshire, Northumberland, Nottinghamshire, Rutland, Shropshire, Staffordshire, Warwickshire, Westmorland, Worcestershire, Yorkshire, the Isle of Man, Ireland, Scotland, or Wales.

² Entries in Classes 550-553 can only be made by residents in Bedfordshire, Berkshire, Buckinghamshire, Cambridgeshire, Cornwall, Devon, Dorset, Essex, Gloucestershire, Hampshire, Hertfordshire, Huntingdonshire, Isle of Wight, Kent, Middlesex, Norfolk, Northamptonshire, Oxfordshire, Somerset, Suffolk, Surrey, Sussex, or Wiltshire.

CCXXVIII *Award of Prizes at Nottingham, 1915.*

Class 554.—*Three Shallow Frames of Comb Honey, for extracting.*
[6 entries.]

- 422 I. (15s.)—G. BRYDEN, 46 Star Hill, Rochester.
426 II. (10s.)—J. T. WILLSON, York Villas, Shirebrook, Mansfield.
428 III. (5s.)—F. G. HALES, Post Office, Wellow, Bath.
424 R. N. & H. C.—W. J. GOODRICH, 2 Oxford Street, Gloucester.

Class 555.—*Heather Honey.* [7 entries.]

- 432 I. (15s.)—J. PEARMAN, Penny Long Lane, Derby.
431 II. (10s.)—M. J. LAMBOLL, Chiddingfold, Surrey.
430 III. (5s.)—G. GARRUTT, Ingleby Barwick, Thornaby-on-Tees.
428 R. N. & H. C.—W. DIXON, 27 Central Road, Leeds.

Class 556.—*Heather Mixture Extracted Honey.* [5 entries.]

- 437 I. (15s.)—J. PEARMAN, Penny Long Lane, Derby.
434 II. (10s.)—J. BERRY, The Apiary, Llanrwst, N. Wales.
435 III. (5s.)—W. DIXON, 27 Central Road, Leeds.

Class 557.—*Best and Most Attractive Displays of Honey in any form and of any year.* [2 entries.]

- 440 I. (25s.)—R. BROWN & SON, Flora Apiary, Somersham, Hunts.
441 II. (15s.)—J. PEARMAN, Penny Long Lane, Derby.

Class 558.—*Exhibits of not less than 2 lb. of Beeswax, the Produce of the Exhibitor's Apiary.* [6 entries.]

- 445 I. (7s. 6d.)—J. PEARMAN, Penny Long Lane, Derby.
443 II. (5s.)—W. GARWELL, 71 Thirlmere Road, Heeley, Sheffield.
442 III. (2s. 6d.)—R. BROWN & SON, Flora Apiary, Somersham, Hunts.
447 R. N. & H. C.—J. T. WILLSON, York Villas, Shirebrook, Mansfield.
H. C.—446.

Class 559.—*Exhibits of not less than 3 lb. of Beeswax, the Produce of the Exhibitor's Apiary.* [3 entries.]

- 449 I. (7s. 6d.)—J. PEARMAN, Penny Long Lane, Derby.
448 II. (5s.)—J. BERRY, The Apiary, Llanrwst, N. Wales.
450 III. (2s. 6d.)—J. T. WILLSON, York Villas, Shirebrook, Mansfield.

Class 560.—*Honey Vinegar.* [3 entries.]

- 451 I. (5s.)—R. BROWN & SON, Flora Apiary, Somersham, Hunts.
452 II. (2s. 6d.)—REV. F. S. F. JANNINGS, Warmworth Rectory, Doncaster.

Class 561.—*Mead.* [4 entries.]

- 456 I. (5s.)—J. PEARMAN, Penny Long Lane, Derby.
457 II. (2s. 6d.)—J. T. WILLSON, York Villas, Shirebrook, Mansfield.

Class 562.—*Exhibits of a practical or interesting nature connected with Bee-culture, not mentioned in the foregoing Classes.* [3 entries.]

- 459 I. (5s.)—REV. F. S. F. JANNINGS, Warmworth Rectory, Doncaster.
458 II. (2s. 6d.)—W. DIXON, 27 Central Road, Leeds.
460 Certificate of Merit.—J. T. WILLSON, York Villas, Shirebrook, Mansfield.

Class 563.—*Exhibits of a scientific nature, not mentioned in the foregoing Classes.* [1 entry.]

- 461 I. (5s.)—F. W. WATTS, 47 Hillcourt Road, East Dulwich, London, S.E.

FARM PRIZE COMPETITIONS.

For the best managed Farms in Nottinghamshire, Derbyshire, and Leicestershire.

Class 1.—*Arable Farms, 400 acres or over, of which approximately two-thirds must be arable.* [2 entries.]

- 2 I. (£100.)—FRANK B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark.
1 II. (£50.)—WILLIAM LAMIN, Bottom House Farm, Bestwood Park, Arnold, Notts.

Class 2.—*Arable Farms, 200 acres and under 400 acres, of which approximately two-thirds must be arable.* [3 entries.]

- 4 I. (£60.)—J. H. LAMIN, Top House Farm, Bestwood Park, Arnold, Notts.
5 II. (£30.)—ARTHUR STRETON, Sibthorpe, Newark.
3 III. (£10.)—HERBERT HOPKINSON, Burrage Farm, Muskham, Newark.

Award of Prizes at Nottingham, 1915. cxxx

Class 3.—*Arable Farms, 50 acres and under 200 acres, of which approximately two-thirds must be arable.* [6 entries.]

- 7 I. (£40.)—R. JOHNSON FOX, Sibthorpe, Newark.
- 11 II. (£20.)—REUBEN SHELTON, Grange Farm, Ruddington, Nottingham.
- 10 III. (£5.)—WILLIAM PEEL, Darfoulds Farm, Worksop.
- V. H. C.—WILLIAM HUNT, Town End Farm, Bolsover.

Class 4.—*Grazing or Dairy Farms, 400 acres or over, of which approximately two-thirds must be permanent grass.* [4 entries.]

- 12 I. (£100.)—W. T. HAYR, Tur Langton Manor, Leicester.
- 13 II. (£50.)—H. C. & J. HOLM, The Grange, Carlton Curlicu, Leicester.
- 14 III. (£10.)—TOM MARRIOTT, Hall Farm, Edmondthorpe, Oakham.

Class 5.—*Grazing or Dairy Farms, 200 acres and under 400 acres, of which approximately two-thirds must be permanent grass.* [2 entries.]

- 16 I. (£60.)—THE EXORS. OF THE LATE F. J. STANHOPE, Claybrooke, Lutterworth.
- 17 II. (£30.)—HERBERT SUTTON, Snarestone, Atherstone.

Class 6.—*Grazing or Dairy Farms, 50 acres and under 200 acres, of which approximately two-thirds must be permanent grass.* [4 entries.]

- 21 I. (£40.)—PHILIP WALKER, Parkfield Farm, Shipley, Ilkeston.
- 18 II. (£20.)—WILLIAM CLAY, Birdholme Farm, Che-sterfield.

FARMERS' MILK COMPETITION.

Open to Farmers supplying Milk to Nottingham from the Counties of Nottingham, Derby, and Leicester.

Class 1.—*Farmers sending to Nottingham 31 gallons of milk and upwards in two deliveries, morning and evening.* [72 competitors.]

- I. (£9 6s.)—SAMUEL NORTH, Treat Lane Farm Dairy, Sneinton, Notts.

Class 2.—*Farmers sending to Nottingham 15 to 30 gallons of milk in two deliveries, morning and evening.* [26 competitors.]

- I. (£6 4s.)—T. H. ARAM, Dunkirk House, Montpelier Road, Dunkirk.

Certificates of Merit were awarded to R. Pole Alsebrook, T. & J. Allsopp, W. N. Bissell, William Brewill, Wm. A. Buchanan, A. E. Chamberlain, A. H. Crawford, W. Septimus Gadd, Joseph B. Greaves, Walter Green, C. John Harwood, Henry Heath, Alfred Holland, Oswald Kirk, F. C. Moss, T. Benjamin Moss, Leonard Nation, Thos. Oliver, F. Peet, John P. Podge, John Bolton, William Paul Brett, Bycroft Bros., J. C. Fisher, Arthur Gillott, Edward James, J. W. North, John Robb, John Smith, W. Somes Staton, Henry Whitlam, W. Whitney.

GATES, FENCING, TIMBER, &c.

Classes 1, 2, and 3.—*Gates.*

Silver Medal.—THE DUKE OF PORTLAND, K.G., Welbeck Abbey, Worksop.

Class 4.—*Tree Guards.*

Silver Medal.—THE DUKE OF PORTLAND, K.G., Welbeck Abbey, Worksop.

Class 5.—*Fencing of Home-grown Wood.*

Silver Medal.—THE DUKE OF PORTLAND, K.G., Welbeck Abbey, Worksop.

Class 6.—*Fencing of Foreign Timber.*

Silver Medal.—ENGLISH BROS., LTD., Wisbech, Cambs.

Bronze Medal.—ARMSTRONG, ADDISON & CO., Sunderland.

Class 7.—*Nurserymen's Competition.*

Silver Medal.—WILLIAM LOWE, Beeston, Notts.

Class 8.—*Seedling Trees and Transplants.*

Silver Medal.—W. PAULGRAVE ELLMORE, The Willows, Saxe-Coburg Street, Leicester.

Class 9.—*Pit Props.*

Silver Medal.—THE WOLLATON COLLIERY CO., LTD., Nottingham.

FLOWER SHOW.

Class 1.—*Groups of Miscellaneous Plants in and out of bloom.* [4 entries.]

- 3 I. (£30.)—JAMES CYPHER & SONS, Cheltenham
 1 II. (£25.)—WILLIAM HOLMES, Chesterfield.
 4 III. (£20.)—R. SIMPSON & SONS, Selby, Yorkshire.

Class 2.—*Collections of Orchids.* [2 entries.]

- 5 I. (£10.)—JAMES CYPHER & SONS, Cheltenham.

Class 3.—*Collections of Delphiniums.* [3 entries.]

- 8 I. (£3.)—BLACKMORE & LANGDON, Twerton, Bath.

Class 4.—*Groups of Tuberous Begonias in Pots.* [2 entries.]

- 11 I. (£10.)—BLACKMORE & LANGDON, Twerton, Bath.
 10 III. (£3.)—R. SIMPSON & SONS, Selby, Yorks.

Class 5.—*Groups of Hardy Plants, Bamboos, Water Lilies and Aquatics.* [2 entries.]

- 12 I. (£20.)—WM. ARTINDALE & SON, Nether Green Nursery, Sheffield.
 12A II. (£15.)—G. GIBSON & CO. Leeming Bar, Bedale.

Class 6.—*Groups of Hardy Herbaceous Plants and Cut Flowers.* [5 entries.]

- 17 I. (£15.)—WM. ARTINDALE & SON, Nether Green Nursery, Sheffield.
 15 II. (£10.)—RICH & CO. Walcot Street, Bath.
 14 III. (£8.)—W. & J. BROWN, Peterborough.
 13 IV. (£5.)—J. HARKNESS & CO. Leeming Bar, Bedale.

Class 7.—*Collections of Cut Sprays of Carnations.* [1 entry.]

- 18 I. (£5.)—O. H. TAIDEVIN, Willaston, near Chester.

Class 8. *Groups of Roses in Pots, any varieties.*

[No entry.]

Class 9. *Collections of Cut Roses.* [5 entries.]

- 22 I. (£5.)—THOMAS ROBINSON, Porchester Nurseries, Nottingham.
 20 II. (£3.)—W. & J. BROWN, Peterborough.
 23 III. (£2.)—WILLIAM LOWE, Bee-ton, Notts.

Class 10. *Collections of Sweet Peas.* [4 entries.]

- 27 I. (£5.)—E. R. JAMES, Wroxton Gardens, Banbury.
 20 II. (£3.)—S. BIDE & SONS, Farnham.
 24 III. (£2.)—F. W. KING & CO., Coggeshall, Essex.

Class 11.—*Collections of Sweet Peas, grown in boxes or pots.*

[No entry.]

Class 12. *Collections of Annuals.*

[No entry.]

Exhibits not for Competition.**Large Gold Medals to:—**

ALLWOOD BROS., Haywards Heath, for Carnations.
 ALEXANDER DICKSON & SONS, LTD., Newtownards, co. Down, for Sweet Peas.
 ALEXANDER DICKSON & SONS, LTD., Newtownards, for Roses.
 DOBBIE & CO., Edinburgh, for Sweet Peas and Antirrhinums.
 JOHN WATERER, SONS & CRISP, LTD., Bagshot, for Hardy Trees and Shrubs.

Gold Medals to:—

KING'S ACRES NURSERIES, LTD., Hereford, for Orchard House Trees in Fruit.
 WILLIAM LOWE, Bee-ton, Notts, for Roses, Delphiniums, &c.
 STUDLEY COLLEGE FOR WOMEN, Studley, Warwickshire, for Vegetables.
 WALSHAW & SONS, The Nurseries, Scarborough, for Spiraeas.

Silver-Gilt Medals to:

W. ARTINDALE & SON, Nether Green Nursery, Sheffield, for Violas.
 BLACKMORE & LANGDON, Twerton, Bath, for Begonias.
 GODFREY & SON, Exmouth, for Pelargoniums, Campanulas, &c.
 HARRISON & SONS, Leicester, for Flowers and Vegetables.
 E. R. JAMES, Wroxton Gardens, Banbury, for Sweet Peas.
 JARMAN & CO., Chard, for Cut Flowers.
 H. R. MAY & SONS, Upper Edmonton, London, N., for new and rare Ferns.
 YOUNG & CO., Hatherley Nurseries, Cheltenham, for Carnations and Antirrhinums.

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Silver Medals to :—

HENRY MERRYWEATHER & SONS, Southwell, Notts., for Cut Roses.
T. ROTHERA & CO., Burton Joyce, Nottingham, for Herbaceous Plants and Flowers.
STUDLEY COLLEGE FOR WOMEN, Studley, Warwickshire, for Flowers and Fruit.
ROBERT SYDENHAM, LTD., Tenby Street, Birmingham, for Sweet Peas.

IMPLEMENTS.

Miscellaneous Implements.

Silver Medals for articles entered as "New Implements for Agricultural or Estate Purposes."

2960 WALSH & CLARK, LTD., Victoria Works, Guiseley, Leeds, for Oil Ploughing Engine
3397 BAMFORDS, Leighton Iron Works, Uttoxeter, for Combined Side Rake, Swath
Turner, Tedder, and Windrower.

3399 BAMFORDS, Leighton Iron Works, Uttoxeter, for new "Lion" Tedder, with rotary
separating lines.

3889 BLACKSTONE & CO., LTD., Stamford, for Oil Engine, stationary type, to start
from cold on heavy petroleum.

PRIZE LIST

For MANCHESTER SHOW, JUNE 27 to JULY 1, 1916.

Total value of Prizes offered (inclusive of Champion Prizes, Special Prizes, Cups, Medals, and Class Prizes), 10,000*l.*, of which amount 1,426*l.* are contributions from the Manchester Local Committee, 2,571*l.* from various Breed Societies, and 273*l.* from other sources.

CHAMPION PRIZES.

The following Champion Prizes are offered by Breed Societies and others:—

HORSES.

SHIRE HORSE SOCIETY:—Two Gold Medals, value 10*l.* each (or 10*l.* in money), for the best Shire Stallion, and for the best Mare or Filly; 5*l.* for the two Reserve Champions; and 5*l.* each to the Breeders of the Champion Shire Stallion, and Mare or Filly.

CLYDESDALE HORSE SOCIETY:—Two Prizes of 10*l.* each for the best Clydesdale Stallion, and for the best Mare or Filly.

SUFFOLK HORSE SOCIETY:—Challenge Cup, value 50*l.*, for the best Suffolk Stallion.

HUNTERS' IMPROVEMENT AND NATIONAL LIGHT HORSE BREEDING SOCIETY:—Two Gold Medals for the best Hunter Mare 4 years and upwards, and for the best Filly not exceeding 3 years old.

NATIONAL PONY SOCIETY:—Two Gold Medals for the best Polo and Riding Pony Stallion or Colt, and for the best Mare or Filly; also a Bronze Medal for the best Foal.

HACKNEY HORSE SOCIETY:—Two Gold Medals, value 10*l.* each (or 10*l.* in money), for the best Hackney Stallion, and for the best Mare or Filly.

WELSH PONY AND COB SOCIETY:—Two Silver Medals and Certificates for the best Welsh Pony Stallion, and for the best Mare or Filly.

HUNTER RIDING CLASSES:—A Gold Challenge Cup, value 52*l.* 10*s.*, for the best Mare or Gelding.

HACK AND RIDING PONIES:—A Gold Challenge Cup, value 25*l.* 10*s.*, for the best Hack or Riding Pony.

HARNESS CLASSES:—Three Gold Challenge Cups value 53*l.* 10*s.* each—(i.) for the best Mare or Gelding, (ii.) for best Double Harness, (iii.) for the best Tandem.

CATTLE.

SHORTHORN SOCIETY:—Two Prizes of 20*l.* each for the best Shorthorn Bull, and for the best Cow or Heifer, and a Silver Medal to the breeders of the Champion Shorthorn Bull and Cow or Heifer.

DAIRY SHORTHORN ASSOCIATION:—Two Prizes of 10*l.* each for the best Pedigree Dairy Shorthorn Bull, and for the best Cow or Heifer; and a Challenge Cup, value 52*l.* 10*s.*, for the best Pedigree Dairy Shorthorn Group of one Bull and two Cows or Heifers.

LINCOLNSHIRE RED SHORTHORN ASSOCIATION:—Two Prizes of 10*l.* each for the best Shorthorn Bull, and for the best Cow or Heifer.

HEREFORD HERD BOOK SOCIETY:—Two Prizes of 10*l.* 10*s.* each for the best Hereford Bull, and for the best Cow or Heifer.

DEVON CATTLE BREEDERS' SOCIETY:—Two Prizes of 10*l.* 10*s.* each for the best Devon Bull, and for the best Cow or Heifer.

SOUTH DEVONS:—A Challenge Cup, value 20*l.*, for the best South Devon animal.

LONGHORN CATTLE SOCIETY:—Two Challenge Cups, value 15*l.* each, for the best Longhorn animals.

SUSSEX HERD BOOK SOCIETY:—Two Silver Medals for the best Sussex Bull, and for the best Cow or Heifer.

RED POLL SOCIETY:—Two Prizes of 5*l.* each for the best Red Poll Bull, and for the best Cow or Heifer.

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ABERDEEN ANGUS CATTLE SOCIETY:—A Gold Medal, value 10*l.*, for the best animal of the Aberdeen Angus breed.

ENGLISH ABERDEEN ANGUS CATTLE ASSOCIATION:—A Gold Medal for the best animal of the opposite sex to that of the animal awarded the Gold Medal of the Aberdeen Angus Cattle Society.

GALLOWAY CATTLE SOCIETY:—Prize of 5*l.* and the Dr. Gillis-pie Memorial Trophy for the best Galloway animal.

BRITISH HOLSTEIN-FRIESIAN CATTLE SOCIETY:—Silver Medals to the First Prize winners in the Classes for Holstein-Friesian Cattle.

ENGLISH JERSEY CATTLE SOCIETY:—Two Prizes of 5*l.* each for the best Jersey Bull, and for the best Cow or Heifer.

ROYAL JERSEY AGRICULTURAL SOCIETY:—Ten Guinea Prize for the best three Jersey Animals bred by Exhibitor.

ENGLISH GUERNSEY CATTLE SOCIETY:—Two prizes of 5*l.* each for the best Guernsey Bull and for the best Cow or Heifer.

ENGLISH KERRY AND DEXTER CATTLE SOCIETY:—Challenge Trophy, value 20*l.*, for the best Kerry Bull and Two Challenge Cups, value 26*l.* 5*s.* each, for the best Kerry Bull, Cow, or Heifer, and for the best Dexter Bull, Cow, or Heifer.

ENGLISH JERSEY CATTLE SOCIETY:—Gold Medal (or 10*l.* in money), Silver Medal and Bronze Medal for the three best Jersey Animals in the Butter-test Classes.

SHEEP.

SOUTHDOWN SHEEP SOCIETY:—A Gold Medal (or 10*l.* 10*s.* in money) for the best Southdown Ram; and Silver Medal (or 1*l.* in money) for the best Pen of Ewes or Ewe Lambs.

HAMPSHIRE DOWN SHEEP BREEDERS' ASSOCIATION:—Prize of 10*l.* for the best Hampshire Down Ram Lamb, Pen of Ram Lambs, or Ewe Lambs.

LINCOLN LONG-WOOL SHEEP BREEDERS' ASSOCIATION:—Prize of 5*l.*, for the best Lincoln Ram.

SOCIETY OF BORDER LEICESTER SHEEP BREEDERS:—A Challenge Cup, value 50*l.*, for the best Border Leicester Sheep, and a Gold Medal to the winner.

KENT OR ROMNEY MARSH SHEEP BREEDERS' ASSOCIATION:—Prize of 10*l.* 10*s.* for the best Kent or Romney Marsh Ram.

GOATS.

BRITISH GOAT SOCIETY:—Silver Challenge Cup for the Anglo-Nubian Goat winning the highest number of points in the Milk-yield Class; also a 2*l.* Special Prize to the winner.

PIGS.

NATIONAL PIG BREEDERS' ASSOCIATION:—Six Gold Medals (or 5*l.* 5*s.* in money) for the best Large White Boar and Sow, Middle White Boar and Sow, and Tamworth Boar and Sow.

BRITISH BERKSHIRE SOCIETY:—Challenge Cup, value 20*l.*, for the most points awarded in a combination of entries, also a Prize of 5*l.* 5*s.* for the best Berkshire Boar or Sow.

LARGE BLACK PIG SOCIETY:—Prize of 10*l.* for the best Large Black Boar; and a Challenge Cup, value twenty guineas, for the best Large Black Sow.

LINCOLNSHIRE CURLY-COATED PIG BREEDERS' ASSOCIATION:—Two Prizes of 5*l.* 5*s.* each, for the best Lincolnshire Curly-coated Boar and the best Sow.

HORSES (£2,786).

SHIRE.	Prizes			SHIRE.	Prizes		
	1st	2nd	3rd		1st	2nd	3rd
	£	£	£		£	£	£
STALLION, foaled in 1915 ¹ . . .	15	10	5	MARE, foaled in or before 1911			
STALLION, foaled in 1914 . . .	15	10	5	(with foal at foot) . . .	15	10	5
STALLION, foaled in 1913 . . .	15	10	5	COLT FOAL, produce of mare			
FILLY, foaled in 1915 ¹ . . .	15	10	5	in above classes . . .	10	5	3
FILLY, foaled in 1914 . . .	15	10	5	FILLY FOAL, produce of mare			
FILLY, foaled in 1913 . . .	15	10	5	in above classes . . .	10	5	3
MARE, foaled in or after 1912				ORFELDING, foaled in or before			
(with foal at foot) . . .	15	10		1913 ¹ . . .	15	10	5

¹ Offered by the Shire Horse Society.

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CLYDESDALE. ¹		Prizes	
		1st	2nd 3rd
STALLION, foaled in 1915	15	10	5
STALLION, foaled in 1914	15	10	5
STALLION, foaled in 1913	15	10	5
FILLY, foaled in 1915	15	10	5
FILLY, foaled in 1914	15	10	5
FILLY, foaled in 1913	15	10	5
MARE (with foal at foot)	15	10	5
FOAL, produce of mare in above class	10	5	3
GELDING, foaled in or before 1913	15	10	5
SUFFOLK. ²		Prizes	
		1st	2nd 3rd
STALLION, foaled in 1915	15	10	5
STALLION, foaled in 1914	15	10	5
STALLION, foaled in 1913	15	10	5
FILLY, foaled in 1915	15	10	5
FILLY, foaled in 1914	15	10	5
FILLY, foaled in 1913	15	10	5
MARE (with foal at foot)	15	10	5
FOAL, produce of Mare in above class	10	5	3
HUNTERS. ³		Prizes	
		1st	2nd 3rd
COLT OR GELDING, foaled in 1915	15	10	5
GELDING, foaled in 1914	15	10	5
GELDING, foaled in 1913	15	10	5
FILLY, foaled in 1915	15	10	5
FILLY, foaled in 1914	15	10	5
FILLY, foaled in 1913	15	10	5
MARE (Novice), foaled in or after 1908 (with foal at foot), up to more than 14 st.	15	10	5
MARE (Novice), foaled in or after 1908 (with foal at foot), up to more than 14 st.	15	10	5
MARE (with foal at foot), up to more than 14 st.	15	10	5
MARE (with foal at foot), up to more than 14 st.	15	10	5
COLT FOAL, produce of Mare in above classes	10	5	3
FILLY FOAL, produce of Mare in above classes	10	5	3
POLO AND RIDING PONIES. ⁴		Prizes	
		1st	2nd 3rd
COLT, FILLY, OR GELDING, foaled in 1915	10	5	3
COLT, FILLY, OR GELDING, foaled in 1914	10	5	3
STALLION, foaled in or before 1913, not exceeding 15 h.	10	5	3
FILLY OR GELDING, foaled in 1913	10	5	3
MARE (with foal at foot), not exceeding 14.2 h.	10	5	3
CLEVELAND BAY OR COACH HORSE.		Prizes	
		1st	2nd 3rd
STALLION, any age	10	5	3
MARE (with foal at foot)	10	5	3
HACKNEYS.		Prizes	
		1st	2nd 3rd
STALLION, foaled in 1915	10	5	3
STALLION, foaled in 1914	10	5	3
STALLION, foaled in or before 1913	10	5	3
FILLY, foaled in 1915	10	5	3
HACKNEYS—continued.		Prizes	
		1st	2nd 3rd
FILLY, foaled in 1914	10	5	3
FILLY, foaled in 1913	10	5	3
MARE (with foal at foot), over 14 h.	10	5	3
HACKNEY PONY.		Prizes	
		1st	2nd 3rd
STALLION, foaled in or before 1913, not over 14 h.	10	5	3
MARE (with foal at foot), not over 14 h.	10	5	3
SHETLAND PONY.		Prizes	
		1st	2nd 3rd
STALLION, foaled in or before 1913, not over 10½ h.	10	5	3
MARE (with foal at foot), not over 10½ h.	10	5	3
WELSH PONY. ⁵		Prizes	
		1st	2nd 3rd
STALLION, foaled in 1913 (not exceeding 11.3 h.), or 1914 (not exceeding 11.2 h.)	10	5	3
STALLION, foaled in or before 1912, not exceeding 12 hands	10	5	3
FILLY, foaled in 1913 (not exceeding 11.3 h.), or 1914 (not exceeding 11.2 h.)	10	5	3
MARE, foaled in or before 1912 (with foal at foot), not exceeding 12 h.	10	5	3
HUNTER RIDING CLASSES. ⁶		Prizes	
		1st	2nd 3rd 4th 5th
MARE OR GELDING, foaled in or before 1912, up to from 12 to 14 st.	15	10	5 —
MARE OR GELDING, foaled in or before 1912, up to more than 14 st.	16	10	5 —
MARE OR GELDING, foaled in or before 1911, up to from 12 to 13.7 st.	20	15	10 5 3
MARE OR GELDING, foaled in or before 1911, up to more than 13.7 and not more than 15 st.	20	15	10 5 3
MARE OR GELDING, foaled in or before 1911, up to more than 15 st.	20	15	10 5 3
HACK AND RIDING PONY CLASSES. ⁶		Prizes	
		1st	2nd 3rd
MARE OR GELDING, foaled in or before 1912, not exceeding 12.2 h. To be ridden by a child born in or after 1904	10	5	3
MARE OR GELDING, foaled in or before 1912, over 12.2 and not exceeding 13.2 h. To be ridden by a child born in or after 1908	10	5	3
MARE OR GELDING, foaled in or before 1912 over 13.2 and not exceeding 15 h.	10	5	3
MARE OR GELDING, foaled in or before 1912, over 15 hands	10	5	3

¹ £20 provided by the Clydesdale Horse Society.

² £50 provided by the Suffolk Horse Society.

³ £60 provided by the Hunters Improvement and National Light Horse Breeding Society.

⁴ £10 provided by a Member of the R.A.S.E.

⁵ £25 provided by the National Pony Society.

⁶ £24 provided by the Welsh Pony and Cob Society.

⁷ Provided by the Manchester Local Committee.

Prize List for Manchester Show, 1916.

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DRIVING CLASSES. ¹	Prize				
	1st	2nd	3rd	4th	5th
Single Harness.	£	£	£	£	£
MARE OR GELDING, not exceeding 14 hands.	10	5	5	3	3
MARE OR GELDING, over 14 and not exceeding 15 hands.	10	5	5	3	3
MARE OR GELDING over 15 and not exceeding 15½ hands.	10	5	5	3	3
MARE OR GELDING over 15½ hands.	10	5	5	3	3
Double Harness.	10	5	5	3	3
HAILES OR GELDINGS	10	5	5	3	3
Tandem.	10	5	5	3	3
HAILES OR GELDINGS	10	5	5	3	3

JUMPING COMPETITIONS. ¹	Prize				
	1st	2nd	3rd	4th	5th
SPECIAL CLASS, Mare or Gelding.	20	10	5	3	3
MARE OR GELDING.	20	10	5	3	3
MARE OR GELDING (First Prize Winners in Classes A and B not eligible).	15	10	5	3	3
MARE OR GELDING (First Prize Winners in Classes A, B and C not eligible).	10	5	5	3	3
CHAMPION CLASS, Mare or Gelding.	20	10	5	3	3

CATTLE (£2,731).

PIT PONIES. ¹	Prizes		
	1st	2nd	3rd
TWO PONIES, not exceeding 12 hands.	10	5	3
TWO PONIES, over 12 and not exceeding 13 hands.	10	5	3
TWO PONIES, over 13 and not exceeding 14½ hands.	10	5	3

DRAUGHT HORSES IN GEARS.¹

<i>Open to Owners in Lancashire and Cheshire.</i>				
SINGLE HORSE	5	3	2	
PAIRS	10	5	3	
<i>Open to Corporations, District Councils and Railway Companies, whose horses are stabled within 20 miles of the Manchester Town Hall.</i>				
SINGLE HORSE	5	3	2	
PAIRS	10	5	3	
<i>Open to Brewers, Butchers, Dyers, and other Traders within 20 miles of the Manchester Town Hall.</i>				
SINGLE HORSE	5	3	2	
PAIRS	10	5	3	
<i>Open to Team Owners and Carriers within 5 miles of the Manchester Town Hall.</i>				
SINGLE HORSE	5	3	2	
PAIRS	10	5	3	

TURNOUTS (INCLUDING RAILWAY VANS).¹

<i>Open to Owners within 20 miles of Manchester Town Hall.</i>				
SINGLE HORSE, Vehicle under 7 cwt.	5	3	2	
SINGLE HORSE, Vehicle 7 cwt. or over.	5	3	2	

DONKEY TURNOUTS (TRADE).¹

<i>Open to Owners within 20 miles of Manchester Town Hall.</i>				
SINGLE DONKEY	3	2	1	15

SHORTHORN. ²	Prizes		
	1st	2nd	3rd
BULL, calved in 1911, 1912 or 1913	10	5	3
BULL, calved on or between Jan. 1, 1914 and March 31, 1914	10	5	3
BULL, calved on or between April 1, 1914 and Dec. 31, 1914	10	5	3
BULL, calved on or between Jan. 1, 1915 and March 31, 1915	10	5	3
BULL, calved on or between April 1, 1915 and Dec. 31, 1915	10	5	3
TWO SPECIAL PRIZES of 100 and 50, for the two best Bulls calved in 1915, the property of an Exhibitor residing in Lancashire.	15	10	-
COW, in-milk, calved in or before 1912	10	5	3
HEIFER, in-milk, calved in 1913	10	5	3
HEIFER, calved on or between Jan. 1, 1914 and March 31, 1914	10	5	3
HEIFER, calved on or between April 1, 1914 and Dec. 31, 1914	10	5	3
HEIFER, calved on or between Jan. 1, 1915 and March 31, 1915	10	5	3
HEIFER, calved on or between April 1, 1915 and Dec. 31, 1915	10	5	3
GROUP CLASS, for the best collection of either three or four Cows or Heifers, bred by Exhibitor	15	10	-

DAIRY SHORTHORN.⁴

BULL, calved in 1914	10	5	3
BULL, calved in 1915	10	5	3
COW, in-milk, calved in or before 1911	10	5	3
COW, in-milk, calved in 1912	10	5	3
HEIFER, in-milk, calved in or after 1913	10	5	3
Milk Yield Prizes	10	5	3

SHORTHORN DAIRY CATTLE.¹

DAIRY COW, in-milk	10	5	3
PAIR OF DAIRY COWS, in-milk	15	10	6
DAIRY COW, in-calf	10	5	3
PAIR OF DAIRY COWS, in-calf	15	10	6

¹ Offered by the Manchester Local Committee.

² £120 provided by the Shorthorn Society.

³ £10 provided by the Shorthorn Society, and £5 offered by the Royal Lancashire Agricultural Society.

⁴ £22 provided by the Dairy Shorthorn Association, and £20 by the Shorthorn Society.

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HOLSTEIN-FRIESIAN. ¹	Prizes		
	1st	2nd	3rd
BULL, calved in or before 1913 . . .	10	5	3
BULL, calved in 1914 . . .	10	5	3
BULL, calved in 1915 . . .	10	5	3
COW, in-milk, calved in or before 1913 . . .	10	5	3
HEIFER, in-milk, calved in 1913 or 1914 . . .	10	5	3
HEIFER, calved in 1915 . . .	10	5	3
Milk Yield Prizes . . .	10	5	3

JERSEY. ²			
BULL, calved 1911, 1912, or 1913 . . .	10	5	3
BULL, calved in 1914 . . .	10	5	3
BULL, calved in 1915 . . .	10	5	3
COW, in-milk, calved in or before 1912 . . .	10	5	3
HEIFER, in-milk, calved in 1913 . . .	10	5	3
HEIFER, in-milk, calved in 1914 . . .	10	5	3
COW OR HEIFER, in-milk, bred by Exhibitor, sired in Great Britain or Ireland . . .	10	5	3
HEIFER, calved in 1915 . . .	10	5	3
Milk Yield Prizes . . .	10	5	3

GUERNSEY. ³			
BULL, calved in 1911, 1912 or 1913 . . .	10	5	3
BULL, calved in 1914 . . .	10	5	3
BULL, calved in 1915 . . .	10	5	3
COW, in-milk, calved in or before 1911 . . .	10	5	3
COW OR HEIFER, in-milk, calved in 1912 or 1913 . . .	10	5	3
HEIFER, calved in 1914 . . .	10	5	3
HEIFER, calved in 1915 . . .	10	5	3
Milk Yield Prizes . . .	10	5	3

KERRY. ⁴			
BULL, calved in 1911, 1912, 1913, or 1914 . . .	10	5	-
COW OR HEIFER, in-milk, calved in or before 1913 . . .	10	5	-
HEIFER, calved in 1914 or 1915 . . .	10	5	-
Milk Yield Prizes . . .	10	5	3

DEXTER. ⁵			
Same as for Kerries.			

BUTTER TESTS.

DAIRY SHORTHORN COW ⁶ . . .	10	5	3
COW, exceeding 900 lb. live weight ⁷ . . .	15	10	5
COW, not exceeding 900 lb. live weight ⁸ . . .	15	10	5

- ¹ £32 provided by the British-Holstein Friesian Cattle Society.
- ² £20 provided by the English Jersey Cattle Society.
- ³ £40 provided by the English Guernsey Cattle Society.
- ⁴ £20 provided by the English Kerry and Dexter Cattle Society.
- ⁵ £30 provided by the English Kerry and Dexter Cattle Society.
- ⁶ Offered by the Dairy Shorthorn Association.
- ⁷ Offered by the English Jersey Cattle Society.
- ⁸ Offered by the Oxford Down Sheep Breeders' Association.
- ⁹ £46 provided by the Shropshire Sheep Breeders' Association.
- ¹⁰ Offered by the Southdown Sheep Society.
- ¹¹ Offered by the Hampshire Down Sheep Breeders' Association.
- ¹² Offered by the Suffolk Sheep Society.
- ¹³ £15 provided by the Dorset Down Sheep Breeders' Association.
- ¹⁴ £18 provided by the Dorset Horn Sheep Breeders' Association.

SHEEP (£1,878). ⁹			
OXFORD DOWN.			
SHEARLING RAM . . .	10	5	3
RAM LAMB ¹⁰ . . .	10	5	3
THREE RAM LAMBS . . .	10	5	3
THREE SHEARLING EWES . . .	10	5	3
THREE EWE LAMBS . . .	10	5	3

SHROPSHIRE. ⁹			
TWO-SHEAR RAM . . .	10	5	3
SHEARLING RAM . . .	10	5	3
FIVE SHEARLING RAMS . . .	15	10	5
THREE RAM LAMBS . . .	10	5	3
THREE SHEARLING EWES . . .	10	5	3
THREE EWE LAMBS . . .	10	5	3

SOUTHDOWN.			
TWO-SHEAR RAM ¹⁰ . . .	10	5	3
SHEARLING RAM . . .	10	5	3
THREE SHEARLING RAMS ¹⁰ . . .	10	5	3
THREE RAM LAMBS . . .	10	5	3
THREE SHEARLING EWES . . .	10	5	3
THREE EWE LAMBS . . .	10	5	3

HAMPSHIRE DOWN. ¹¹			
Prizes			
	1st	2nd	3rd
TWO-SHEAR RAM ¹¹ . . .	10	5	-
SHEARLING RAM . . .	10	5	3
RAM LAMB ¹¹ . . .	10	5	3
THREE RAM LAMBS . . .	10	5	3
THREE SHEARLING EWES . . .	10	5	3
THREE EWE LAMBS . . .	10	5	3

SUFFOLK. ¹²			
Prizes			
	1st	2nd	3rd
TWO-SHEAR RAM ¹² . . .	10	5	3
SHEARLING RAM . . .	10	5	3
RAM LAMB ¹² . . .	10	5	3
THREE RAM LAMBS . . .	10	5	3
THREE SHEARLING EWES . . .	10	5	3
THREE EWE LAMBS . . .	10	5	3

DORSET DOWN. ¹³			
SHEARLING RAM . . .	10	5	-
THREE RAM LAMBS . . .	10	5	-
THREE SHEARLING EWES . . .	10	5	-

DORSET HORN. ¹⁴			
SHEARLING RAM, dropped after Nov. 1, 1911 . . .	10	5	3
THREE RAM LAMBS, dropped after Nov. 1, 1915 . . .	10	5	3
THREE SHEARLING EWES, dropped after Nov. 1, 1914 . . .	10	5	3
THREE EWE LAMBS, dropped after Nov. 1, 1915 . . .	10	5	3

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GOATS—continued.	Prizes		
	1st	2nd	3rd
	£	£	£
GOATLING, Swiss or any other variety, above 1 year and not exceeding 2 years old	3	2	1
FEMALE KID, Anglo-Nubian, entered or eligible for entry in the Anglo-Nubian section of the Herd Book, not exceeding 1 year old	3	2	1
FEMALE KID, Swiss or any other variety, not exceeding 1 year old	3	2	1
Milk Yield Prizes	3	2	1

PIGS (£782 5s.).

Large White ¹	} Prizes for the best of each breed.
Middle White ¹	
Tamworth ¹	
Berkshire ¹	
Large Black ¹	
Lincolnshire Curly-Coated ¹	

In each of the above Breeds the following prizes will be given:—

	1st	2nd	3rd
	£	£	£
BOAR, farrowed in 1912, 1913, or 1914	10	5	3
BOAR, farrowed in 1915	10	5	3
BOAR, farrowed in 1916	10	5	3
BREEDING SOW, farrowed in 1912, 1913, or 1914	10	5	3
SOW, farrowed in 1915	10	5	3
THREE SOW PIGS, farrowed in 1916	10	5	3

POULTRY (£481 16s.).

Prizes of 30s., 20s., and 10s. are offered in each class for the best COCK, HEN, COCKEREL, and PULLET of the following Breeds:—

Dorking, Silver Grey.
Dorking, Dark Coloured.

THREE PRIZES 1L. 1s. each: (1) for the best Silver Grey, (2) for the best Dark Coloured Dorking, (3) for the best Dorking Chicken.²

Langshan.
Broad Langshan.
Brahma.
Cochin.

- ¹ £12 provided by the National Pig Breeders' Association.
- ² £18 provided by the British Berkshire Society.
- ³ £12 provided by the Large Black Pig Society.
- ⁴ £18 provided by the Lincolnshire Curly-Coated Pig Breeders' Association.
- ⁵ Offered by the Dorking Club.
- ⁶ Offered by the Sussex Poultry Club.
- ⁷ Offered by the Maline Poultry Club.
- ⁸ Offered by the Campine Club.
- ⁹ Offered by the White Wyandotte Club.
- ¹⁰ Offered by the Black Wyandotte Club.
- ¹¹ Offered by the Buff Orpington Club.
- ¹² Offered by the White Orpington Club.
- ¹³ Offered by the Black Orpington Club.
- ¹⁴ Offered by the Blue Orpington Club.
- ¹⁵ Offered by the British Rhode Island Red Club.
- ¹⁶ Offered by the Blue Leghorn Club.

POULTRY—continued.

Sussex, Red.
Sussex, Light.
Sussex, Speckled.
Sussex, Brown.

FOUR SERVIETTE RINGS: (1) for best Red, (2) for best Light, (3) for best Speckled Sussex.⁹

Faverolle.
Maline.

SILVER MEDAL for the best Maline.⁷

Campine.

SILVER MEDAL for best Campine.⁸

Wyandotte, White.

A SPECIAL PRIZE of 10s. and the "Visiting Cup," for the best White Wyandotte.⁹

Wyandotte, Black.

A SPECIAL PRIZE of 10s. for the best Black Wyandotte.¹⁰

Wyandotte, Gold or Silver Laced.

Wyandotte, Blue.

Wyandotte, any other variety.

Orpington, Buff.

A PIECE OF PLATE, value 3L. 3s. for the best Buff Orpington.¹¹

Orpington, White.

TWO SPECIAL PRIZES for the best White Orpingtons.¹²

Orpington, Black.

A SPECIAL PRIZE for the best Black Orpington.¹³

Orpington, Blue.

TWO SPECIAL PRIZES of 10s. each for the best Blue Orpingtons.¹⁴

Orpington, any other variety.
British Rhode Island Red.

A SPECIAL PRIZE for the best British Rhode Island Red.¹⁵

Russian Orloff.
Game, Old English.
Game, Indian.
Game, Modern.
Game, Black Sumatra.
Minorca.
Leghorn, White.
Leghorn, Brown.
Leghorn, Black.
Leghorn, Blue.

A SPECIAL PRIZE for the best Blue Leghorn.¹⁶

POULTRY—continued.

Leghorn, any other colour.
Sicilian Buttercup.

Two SPECIAL PRIZES for the best
Sicilian Buttercups.¹

Plymouth Rock, Barred.

A SPECIAL PRIZE for the Best
Barred Plymouth Rock.²

Plymouth Rock, Buff.

A SPECIAL PRIZE for the best
Buff Plymouth Rock.³

Plymouth Rock, any other colour.
Scots Dumpy.

Arcana.

Yokohama.

A SILVER MEDAL for the best
Yokohama.⁴

Any other Breed.

DUCKS.

DRAKE OR YOUNG DRAKE.

DUCK OR DUCKLING.

Aylesbury.

Rouen.

Indian Runner.

Two SPECIAL PRIZES of 10s. each
for the best Indian Runners.⁵

Any other Variety.

GEESE.

GANDER AND GOOSE.

Emdon.

Toulouse.

TURKEYS.

Cock and Hen.

White.

Any other variety.

BANTAMS.

COCK OR COCKEREL.

Schright.

Wyandotte.

Scotch Grey.

Old English Game.

Modern Game.

Rosecomb, Black or White.

Cochin or Pekin.

Yokohama.

A SILVER MEDAL for the best
Yokohama Bantam.⁶

Japanese.

Any other variety.

PENS FOR TABLE PURPOSES.⁷

Indian Game and Dorking, First Cross.

Indian Game and Buff Orpington.

First Cross.

Indian Game and any other Pure

Breed, First Cross.

A SILVER CUP, value 10s., for the
best Pen.⁸

Single Bird, Cockerel or Pullet, Cross

Breed.

Single Bird, Cockerel or Pullet, Pure

Breed.

Single Bird, Cockerel or Pullet, Pure

Breed.

Single Bird, Cockerel or Pullet, Pure

Breed.

Single Bird, Cockerel or Pullet, Pure

Breed.

Single Bird, Cockerel or Pullet, Pure

Breed.

Single Bird, Cockerel or Pullet, Pure

Breed.

Single Bird, Cockerel or Pullet, Pure

Breed.

Single Bird, Cockerel or Pullet, Pure

Breed.

Single Bird, Cockerel or Pullet, Pure

Breed.

Single Bird, Cockerel or Pullet, Pure

Breed.

Single Bird, Cockerel or Pullet, Pure

Breed.

PRODUCE (£528).

BUTTER.

Prizes
1st 2nd 3rd

TWO POUNDS OF FRESH £ 2

BUTTER, without any salt,
made up in plain pounds,
from the milk of Channel

Island, Devon, or South Devon
Cattle and their crosses. . . 4 2

TWO POUNDS OF FRESH

BUTTER, without any salt,
made up in plain pounds,
from the milk of Cattle of any

breed or cross other than
those mentioned. . . 4 2

TWO POUNDS OF FRESH

BUTTER, slightly salted, made
up in plain pounds, from the
milk of Channel Island, Devon,

or South Devon Cattle and
their crosses. . . 4 2

TWO POUNDS OF FRESH

BUTTER, slightly salted, made
up in plain pounds, from the
milk of Cattle of any breed or

cross other than those men-
tioned. . . 4 2

THREE POUNDS OF FRESH

BUTTER, slightly salted,
made up in pounds in the
most attractive marketable

designs. The designs as well
as the quality will be taken
into account by the Judge. . . 4 2

THREE POUNDS OF FRESH

BUTTER, slightly salted, made
up in pounds and packed in
non-returnable boxes for

transmission by rail or parcel
post. The packing, the box,
and the quality will be taken
into account by the Judge who
will open the exhibits. . . 4

CHEESE: (made in 1916.) 1st 2nd 3rd

THREE LANCASHIRE, not over
12 lb. each. . . 4 2

THREE LANCASHIRE, not over
40 lb. each, made on a farm
of not exceeding 100 statute

acres. . . 10 5

THREE LANCASHIRE, not over
40 lb. each, made on a farm
exceeding 100 statute acres. . . 10 5

THREE CHESHIRE (coloured),
not over 40 lb. each. . . 10 5

THREE CHESHIRE (coloured),
over 40 lb. each. . . 10 5

THREE CHESHIRE (uncoloured),
not over 40 lb. each. . . 10 5

THREE CHESHIRE (uncoloured),
over 40 lb. each. . . 10 5

THREE CHEDDAR, not less
than 50 lb. each. . . 5 3

THREE CHEDDAR TRUCKLES 4 2

THREE STILTON 4 2

THREE WENSLEYDALE (Stil-
ton shape) 4 2

¹ Offered by the International Buttercup Club.

² Offered by the Barred Plymouth Rock Club.

³ Offered by the Buff Plymouth Rock Club.

⁴ Offered by the Yokohama Club.

⁵ Offered by the Indian Runner Duck Club.

⁶ Offered by the Manchester Local Committee.

⁷ £100 provided by the Manchester Local Committee.

CHEESE—continued.

	Prizes			
	1st	2nd	3rd	4th
THREE SMALL CHEESES, not exceeding 6 lb. each, of Cheddar or Cheshire character . . .	3	2	1	—
THREE SMALL CHEESES, not exceeding 6 lb. each, of Gilton or Wensleydale character . . .	3	2	1	—
THREE SOFT CHEESES, made from whole milk . . .	3	2	1	—
THREE SOFT CHEESES, made from cream without the addition of Rennet . . .	3	2	1	—

BACON & HAMS.

	Prizes			
	1st	2nd	3rd	4th
Open only to breeders, who need not necessarily have cured their exhibits.	—	—	—	—
10 SIDES OF BACON, pale dried, Wiltshire style, with ham attached . . .	3	2	1	—
10 SIDES OF BACON, smoke dried, Wiltshire style, with ham attached . . .	3	2	1	—
10 SIDES OF BACON, pale dried, Wiltshire style, hamless . . .	3	2	1	—
10 SIDES OF BACON, smoke dried, Wiltshire style, hamless . . .	3	2	1	—
10 SIDES OF BACON, cured in the Cumberland style, hamless . . .	3	2	1	—
10 HAMS, pale dried, not exceeding 14 lb. weight . . .	3	2	1	—
10 HAMS, smoke dried, not exceeding 14 lb. weight . . .	3	2	1	—
10 HAMS, pale dried, exceeding 14 lb. weight . . .	3	2	1	—
10 HAMS, smoke dried, exceeding 14 lb. weight . . .	3	2	1	—

Open only to Curers, who need not necessarily have bred the animals from which the exhibits have been taken.

10 SIDES OF BACON, pale dried, Wiltshire style, with ham attached . . .	3	2	1	—
10 SIDES OF BACON, smoke dried, Wiltshire style, with ham attached . . .	3	2	1	—
10 SIDES OF BACON, cured in the Cumberland style, hamless . . .	3	2	1	—
10 HAMS, pale dried . . .	3	2	1	—
10 HAMS, smoke dried . . .	3	2	1	—

CIDER AND PERRY.

15 of DRY CIDER, made in 1915 . . .	3	2	1	—
15 of SWEET CIDER, made in 1915 . . .	3	2	1	—
15 of CIDER, made previous to 1915 . . .	3	2	1	—
1 Doz. DRY CIDER, made in 1915 . . .	3	2	1	—
1 Doz. SWEET CIDER, made in 1915 . . .	3	2	1	—
1 Doz. CIDER, made previous to 1915 . . .	3	2	1	—
1 Doz. DRY PERRY . . .	3	2	1	—
1 Doz. SWEET PERRY . . .	3	2	1	—
CHALLENGE CUP for the best exhibit Cider . . .	—	—	—	—

Offered by the Cider Growers of the West of England.

BOTTLED FRUITS & VEGETABLES.

BOTTLED FRUITS.

Open to Amateurs.

	Prizes		
	1st	2nd	3rd
Three varieties of FRUIT bottled in syrup. To be selected from: Red or Yellow Plums, Greengages, Pears, Cherries and Raspberries . . .	30	20	10
Six varieties of FRUIT bottled in water. To be selected from: Red Plums, Yellow Plums, Victoria Plums, Greengages, Pears, Apples, Damsons and Cherries . . .	60	40	20
Six varieties of SOFT FRUIT bottled in water. To be selected from: Gooseberries, Raspberries, Loganberries, Blackberries, Black Currants, Red Currants, Raspberries and Red Currants mixed . . .	60	40	20
Three varieties of FRUIT bottled in water. To be selected from: Red or Victoria Plums, Yellow Plums, Pears, Greengages, Damsons and Cherries . . .	30	20	10
Three varieties of SOFT FRUIT bottled in water. To be selected from: Gooseberries, Raspberries, Loganberries, Blackberries, Black Currants, Red Currants, Raspberries and Red Currants mixed . . .	30	20	10

Open to Fruit Preservers.

Six varieties of FRUIT bottled in syrup. To be selected from: Peaches, Apples, Red or Yellow Plums, Greengages, Pears, Cherries and Raspberries . . .	60	40	20
Six varieties of FRUIT bottled in water. To be selected from: Red Plums, Yellow Plums, Victoria Plums, Greengages, Pears, Apples, Damsons and Cherries . . .	60	40	20
Six varieties of SOFT FRUIT bottled in water. To be selected from: Gooseberries, Raspberries, Loganberries, Blackberries, Black Currants, Red Currants, Raspberries and Red Currants mixed . . .	60	40	20

Open Class.

Twelve varieties of FRUIT bottled in water . . .	80	60	40
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BOTTLED VEGETABLES.

Open to Amateurs.

Three varieties of VEGETABLES bottled in water. To be selected from: Peas, Broad Beans, Kidney Beans, and Asparagus . . .	30	20	10
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WOOL (of 1916 Clip).

Three Fleeces in each entry.	Prizes		
	1st	2nd	3rd
PURE BREED CLASSES. ¹	£	£	£
OXFORD DOWN	3	2	1
SOUTHDOWN	3	2	1
HAMPSHIRE DOWN	3	2	1
DORSET HORN	3	2	1
RYELAND	3	2	1
LINCOLN	3	2	1
LEICESTER	3	2	1
BORDER LEICESTER	3	2	1
WENSLEYDALE BLUE-FACED	3	2	1
KENT OR ROMNEY MARSH (Rams). . . .	3	2	1
Do. (not Rams)	3	2	1

WOOL—continued.

	Prizes	
	1st	2nd
COTSWOLD	3	2
DARTMOOR	3	2
EXMOOR HORN	3	2
WELSH MOUNTAIN	3	2
CROSS BREED CLASSES.		
First Cross between two distinct breeds of Short Wool	3	2
First Cross between two distinct breeds of Long Wool	3	2
First Cross of any Long and Short Wool	3	2
First Cross of pure bred sheep of which one must be Mountain or Moorland	3	2

FARMERS' MILK COMPETITION.

Prizes and Certificates of Merit are offered to farmers who supply milk Manchester daily from the counties of Lancashire, Cheshire, and Nottingham.

FLOWER SHOW.

Tuesday, June 27th, to Friday, June 30th.

Schedules and Forms of Entry can be had on application to the Secretary, R. Agricultural Society of England, 16 Bedford Square, London, W.C.; or Mr. Peter J. Flower Show Managers, Trentham, Stoke-on-Trent.

CHAMPIONSHIP DOG SHOW.

The Manchester Dog Show Society and the National Terrier Club will hold Championship Dog Show within the Showyard, on Thursday and Friday, June 29th and 30th.

Full particulars can be had on application to the Secretary and Manager, J. HERBERT HALL, 1 Cooper Street, Manchester.

HIVES AND HONEY EXHIBITION.

Tuesday, June 27th, to Saturday, July 1st.

Schedules and Forms of Entry can be had on application to the Secretary, Bee Keepers' Association, 23 Bedford Street, Strand, W.C.

¹ The Second and Third Prizes are provided by the respective Flock & Societies.

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